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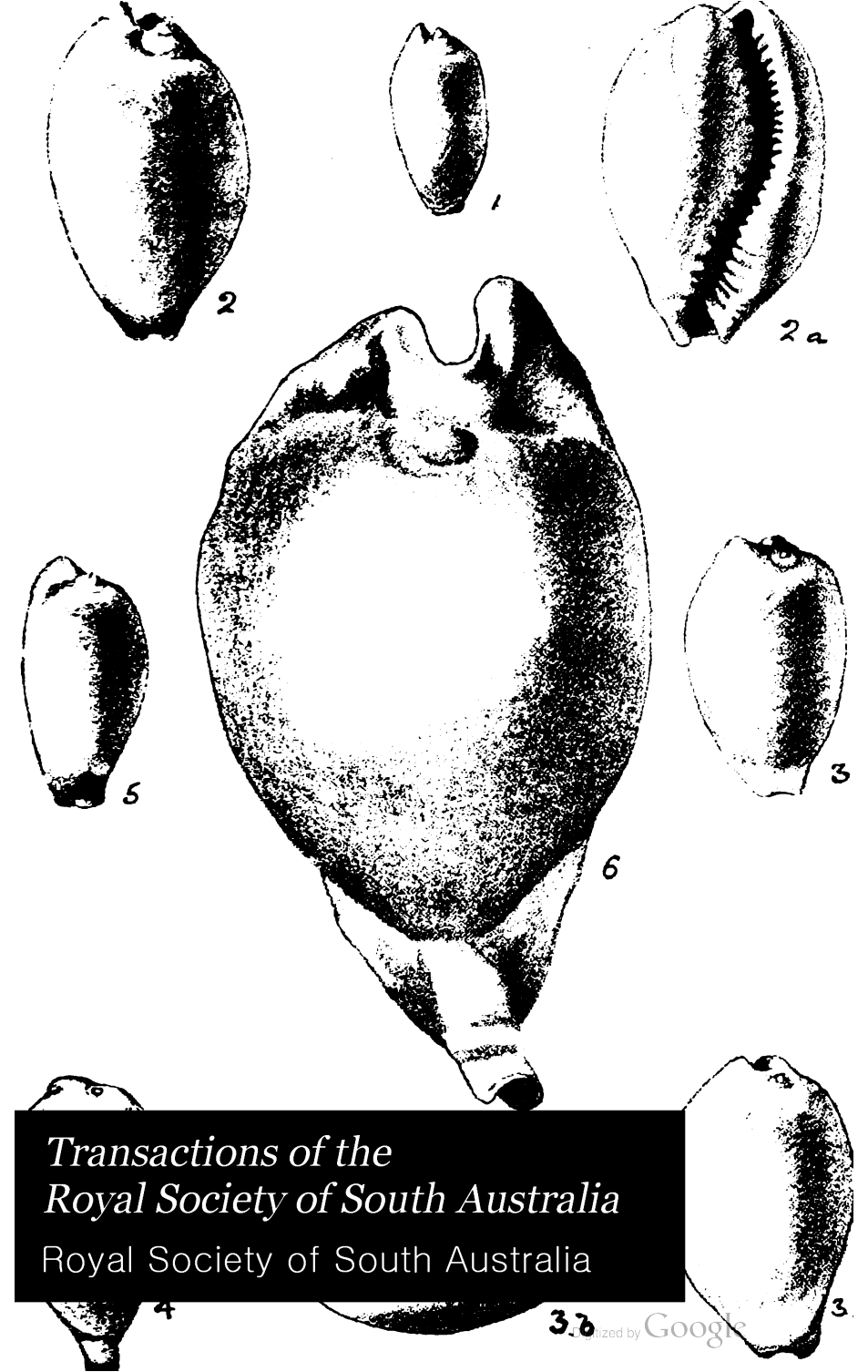

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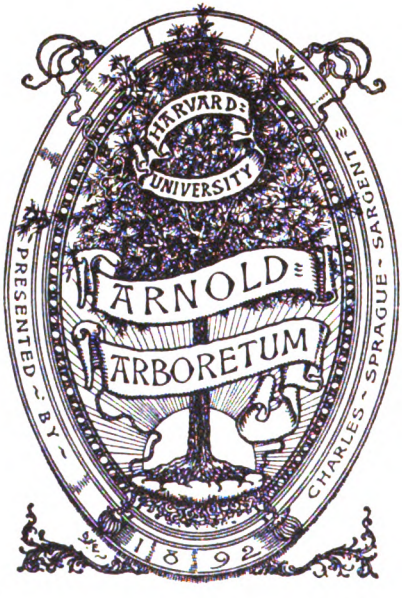

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TRANSACTIONS AND PROCEEDINGS

AND

REPORT

OF THE

ROYAL SOCIETY of SOUTH AUSTRALIA.

VOL. XV.

For 1891-92.

EDITED BY PROFESSOR RALPH TATE.

Adelaide:

W. C. RIGBY, 74, KING WILLIAM STREET.

DECEMBER, 1892.

Parcels for transmission to the Royal Society of South Australia, from Europe and America, should be addressed "per W. C. Rigby, care Messrs. Thos. Meadows & Co., 35, Milk Street, Cheapside, London."

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Mar 7, 1922

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TRANSACTIONS

OF THE

Royal Society of South Australia.

VOL. XV., Part I.

WITH NINE PLATES,

Illustrative of Prof. Tate's Paper on the Gastropoda of the Tertiary of Australia, part 3, in Vol. XIII. of the Society's Transactions.

EDITED BY PROFESSOR RALPH TATE.

ISSUED JULY, 1892.

Adelaide:

W. C. RIGBY, 74, KING WILLIAM STREET.

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Introduced Plants in the Northern Territory.

By Maurice Holtze, F.L.S.

[Read November 3, 1891.]

The object of my paper is only to record those plants which in the Northern Territory have, up to date, escaped from cultivation, or which have been introduced unintentionally. Some of them have already identified themselves so thoroughly with their new home that a collector, not conversant with their history, will unhesitatingly consider them as part of the indigenous flora. In a few instances plants, naturally wild in North Australia, have been introduced in a cultivated form, and these cultivated plants, escaped from cultivation, may mislead the collector considerably.

In most cases the plants enumerated have been introduced during my residence in the Territory; others I have seen, so to say, in their infancy, and a few may be said to be, for me, prehistoric. Of these latter, two, *Tamarindus Indicus*, Lin., and *Hyptis suaveolens*, Poit., have been included in the Flora Australiensis, but I fear I must, nevertheless, deny them the right to be called truly indigenous. *Tamarindus Indicus* is only to be found on the North Coast, at places which have been visited by Malay-prows for many years past, and as the fruit of the tamarind forms part of the daily food of the Malays, there can be no doubt that this plant has been introduced by them. *Hyptis suaveolens* was found by Leichhardt at Port Essington, and is found there only within a limited radius of the old settlement, while at Port Darwin, where it was introduced about 20 years ago by a Mr. Schmidt, from Timor, I have been able to watch its spread in the wake of settlement.

I come now to the other plants, introduced by the old settlers at Port Essington. They are:—

Capsicum frutescens, Lin.
Moringa pterygosperma, Gaertn.
Mangifera Indica, Lin.
Guazuma tomentosa, H. & B.

I may say that other plants introduced here may have escaped my observation.

Next we come to those plants introduced within the last 20 years. These are comparatively numerous, and some of them have already overrun the country to such an extent as to become troublesome pests. Some of them, it is true, are useful fodder

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plants, others are, in their cultivated state, of great commercial value, such as cotton, indigo, and indiarubber, but others again, as, for instance, *Hyptis suaveolens* and *Passiflora fœtida*, are exterminating the native vegetation wherever they have taken root, by their almost incredible luxuriance. *Passiflora fœtida*, although introduced hardly ten years ago, is suffocating already, to a great extent, the undergrowth of the forest near Fannie Bay, and as the fruit is relished by birds and natives, this plant promises to become a great nuisance.

I will now enumerate the plants introduced during the last 20 years :—

Papaveraceae.

Argemone Mexicana, *Lin.*

Capparideae.

Cleome uniglandulosa, *Cavan.*

Malvaceae.

Hibiscus Sabdariffa, *Lin.*
Gossypium herbaceum, *Lin.*
Gossypium Barbadense, *Lin.*

Oxalideae.

Oxalis corniculata, *Lin.*
Oxalis Valdiveana, *Bernard.*

Meliaceae.

Melia Azedarach, *Lin.*

Rhamnaceae.

Ziziphus Jujuba, *Lam.*

Leguminosae.

Indigofera Anil, *Lin.*
Indigofera tinctoria, *Lin.*
Clitorea ternatea, *Lin.*
Phaseolus atropurpureus, *Sesse.*
Cajanus Indicus, *Sprengl.*
Cassia alata, *Lin.*
Mimosa rubricaulis, *Lam.*
Mimosa pudica, *Lin.*
Acacia Arabica, *Willd.*
Acacia leucocephala, *Bertero.*
Desmodium gyrans, *DeC.*

Passifloreae.

Passiflora fœtida, *Cavan.*, var. pectinata.

Compositae.

Ageratum Mexicanum, *Sweet.*
Zinnia elegans, *Hort.*
Zinnia verticillata, *Andr.*

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Calliopsis bicolor, *Reihbch.*
Calliopsis cardaminæfolia, *DeC.*
Gaillardia picta, *Hort.*
Tagetes patula, *Lin.*
Cacalia sonchifolia, *Wall.*
Sonchus oleraceus, *Lin.*

Apocyneae.

Vinca rosea, *Lin.*, var. alba.

Asclepiadeae.

Asclepias Curassavica, *Lin.*

Convolvulaceae.

Ipomœa sinuata, *Ortega.*
Ipomœa Quamoclit, *Lin.*
Ipomœa aquatica, *Forsk.*

Solanaceae.

Nicandra physaloides, *Gaertn.*
Datura fastuosa, *Lin.*
Datura Stramonium, *Lin.*
Datura inermis, *Tayu.*

Scrophularineae.

Torenia Fournieri, *Lindl.*

Pedalineae.

Sesamum orientale, *Lin.*

Verbenaceae.

Verbena Bonariensis, *Lin.*
Lantana hybrida, *Hort.*
Stachytarpheta mutabilis, *Vahl.*
Stachytarpheta Jamaicensis, *Vahl.*

Labiatae.

Salvia coccinea, *Lin.*
Leonotis nepetæfolia, *R. Br.*

Phytolaccaceae.

Rivina humilis, *Lin.*

Amarantaceae.

Celosia cristata, *Lin.*
Amarantus viridis, *Lin.*
Amarantus oleraceus, *Lin.*
Amarantus melancholicus, *Lin.*
Gomphrena globosa, *Willd.*

Euphorbiaceae.

Ricinus communis, *Lin.*
Manihot Glaziovi, *J. Mueller.*

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Gramineae.

Andropogon Schimperi, *Hochst.*
Tricholæna rosea, *Nees.*
Sorghum vulgare, *Pers.*
Panicum maximum, *Tayu.*
Eleusine caracana, *Pers.*
Eleusine oligostachya, *Link.*
Eragrostis elegans, *Nees.*

There is, of course, with many of these plants no fear that they may be taken as indigenous; but others—for instance, *Eleusine*, *Eragrostis*, *Panicum*, and *Andropogon*, which are represented in numerous species in North Australia—will easily be collected as truly indigenous.

I come now to a few plants which, although truly indigenous in North Australia, have been introduced in a cultivated state, and have escaped from cultivation. These plants are :—

Corchorus capsularis, *Lin.*
Crotolaria juncea, *Lin.*
Acacia Farnesiana, *Willd.*
Oryza sativa, *Lin.*
Sorghum Haleppense, *Pers.*

We all know that plants alter much by cultivation, and in these cases also there is no mistake possible if the presence of introduced plants is once recorded. In conclusion, I will draw your attention to the fact that *Oryza sativa* is found truly wild only in Arnheim Land. The same can be said of *Phaseolus vulgaris*, Lin., *Dolichos uniflorus*, Lam., and *Dioscorea sativa*, Lin. Is, then, Australia the home from where these plants have been introduced to India and other countries many centuries before our times? or has Australia been connected with Asia in prehistoric ages? Geologists tell us that we inhabit the remnant of the oldest continent; flora and fauna contain the nearest allies to antediluvian formations. Can it then be possible that the beastlike Autochthone Australian has been the ancestor of the human family? I must leave it for abler thinkers to solve this problem.

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Descriptions of New South Australian Lepidoptera.

By Oswald B. Lower.

[Read March 1 and June 7, 1892.]

HEPIALIDÆ.

Hepialus, *F.*

Hepialus (Charagia) Blackburnii, sp. nov.

Female, 75 mm. Head and palpi yellowish-green. Antennæ dark red. Thorax yellowish-green. Abdomen salmon-pink, three posterior segments greenish-yellow; abdomen beneath ochreous-whitish. Legs yellowish-green, anterior and middle tibiæ and tarsi dark red, posterior tibiæ and tarsi salmon-pink. Forewings elongate triangular; costa straight, slightly arched at apex, apex round-pointed; hindmargin nearly straight, oblique; light yellowish-green, golden tinged; markings ferruginous; a small basal spot; five subquadrate spots on costa at almost equal distances, extending from one-fifth to two-thirds, posterior smallest; inner marginal edge ferruginous, with two irregular sub-triangular patches, first at one half, second at two-thirds; obliquely beyond first is a wedge-shaped spot; an irregular series of six spots proceed from second patch directly towards apex, but not near reaching it: cilia ferruginous, tips paler, with an undulating basal line. Hindwings salmon-pink; cilia paler, with a much darker parting-line. Underside of all wings salmon-pink, suffused with greenish, more especially towards hindmargin of forewings and costa of hindwings.

For my type of this rare and beautiful insect I am indebted to the Rev. Thos. Blackburn, of Woodville, to whom I have great pleasure in dedicating it.

The present species is nearest *Hep. Scottii*, but is much smaller. One specimen from Port Lincoln, South Australia.

Hectomanes, *Meyr.*

Hect. pteromela, sp. nov.

Male, 26-29 mm. Head, thorax, and legs blackish-fuscous. Antennæ ochreous-fuscous. Abdomen lighter fuscous. Forewings dark-fuscous, rather lighter towards hindmargin: costa blackish towards base; a moderate well-defined white longitudinal streak from base almost to hindmargin, suffusedly margined on both sides with blackish: from extremity of streak proceeds

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to apex two or three blackish dots indistinctly ringed with whitish; a hindmarginal row of similar dots; a few blackish marks on middle of inner margin: cilia fuscous mixed with paler, with an indistinct basal line. Hindwings dark fuscous: cilia paler, with a darker basal line.

Two specimens, at light, Parkside, in April, 1892. A very distinct species, not approaching any other; the longitudinal streak distinguishes it immediately.

HECT. SIMULANS, *Walker*.

One fine female taken at Blackwood in April, not previously recorded from South Australia.

HECT. NOSERODES, *Meyr*.

One specimen, a female, taken at Blackwood Railway Station (at light) in April, 1892, not previously recorded from South Australia.

HECT. POLYSPILA, *Meyr*.

One male specimen taken at Parkside (at light) April, not previously recorded from South Australia.

HECT. COMPSENTA, *Meyr*.

Five specimens, at Blackwood, in April and May.

ARCTIADÆ.

TERMESSA, *Walker*.

TERM. XANTHOMELAS, sp. nov.

Male, 28-31 mm. Head ochreous-yellow. Palpi deeper ochreous-yellow. Thorax ochreous-yellow, with a rather broad blackish anterior transverse band; shoulders broadly black. Antennæ black, becoming ochreous towards tips. Abdomen deep ochreous-yellow, posterior segments delicately margined with fuscous. Anterior and middle legs blackish, coxæ yellow, posterior legs ochreous-yellow, slightly infuscated. Forewings elongate triangular, costa moderately arched, apex obtuse, hindmargin somewhat obliquely rounded; ochreous-yellow, with black markings; a short longitudinal streak on costa near base, posteriorly suffused and continued very narrowly on costa to first fascia; a rather broad irregularly-edged fascia from one-third of costa to one-third of inner margin, broadly dilated on inner margin; a similar fascia from two-thirds of costa to anal angle, broadly dilated on costa, almost touching apex; a dentate hindmarginal band, which is inclined to separate into six spots: cilia dark fuscous, tips lighter. Hindwings ochreous-yellow; a blackish spot near apex; a small (variable in size) black dot at anal angle: cilia ochreous-yellow, fuscous at apex, and beneath minute dot ochreous-yellow.

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Allied to *Term. congrua*, Walker, but differs in cilia of the forewings, and is without the entire blackish hindmarginal band of hindwings; in other respects it is superficially similar. The present species and *congrua* are the only two with yellow palpi.

Two specimens at Waterfall Gully on October 27th, 1890.

TERM. NIVOSA, *Walker*.

I have taken three specimens of this insect at Littlehampton, in November, from *Acacia pycnantha*.

TERM. ZONOPHANES, *Meyrick*.

I have taken one specimen at Yorketown.

MONOCTENIADÆ.

MONOCTENIA, *Gn*.

MONOCTENIA EXIMIA, sp. nov.

Female, 65 mm. Head ochreous-whitish, face deep purplish-crimson. Palpi purplish-crimson, terminal joint ochreous-tinged. Thorax and abdomen pale pinkish, thorax beneath very woolly, pale pink, anteriorly dark purplish-crimson. Antennæ ochreous. Anterior legs dark crimson-purple with whitish apical joints, middle pair paler (posterior pair broken). Forewings elongated triangular, costa straight, apex acute, hindmargin strongly bowed, crenulate; rosy purplish-ochreous; a rather broad pale pinkish or flesh-coloured costal streak from base to near apex, posteriorly attenuated; cilia blackish, with a pinkish basal line. Hindwings rosy purplish-ochreous, base much paler; cilia blackish, with a pinkish basal line.

Intermediate between *smerintharia*, Felder, and *calladelpha*, Lower; but is immediately known by the costal streak.

Port Lincoln; one specimen.

MON. CALLADELPHA, sp. nov.

Male, 60-65 mm. Head pale fleshy-ochreous, face deep purplish-ferruginous. Palpi above deep purple-ferruginous, beneath pale fleshy-ochreous, terminal joint deep purple-ferruginous. Thorax and abdomen pale fleshy-ochreous, abdomen with lateral tufts. Thorax beneath very woolly, dark crimson-purple anteriorly, lighter posteriorly. Antennæ ochreous. Legs pale fleshy-ochreous; tibiæ and tarsi much darker. Forewings elongated triangular; costa straight, hindmargin very strongly bowed, crenulate; rosy purplish-ochreous, without markings, all veins tending to become yellowish; cilia yellowish-ochreous with purplish fuscous spots on veins. Hindwings purplish, suffused with rosy, much paler towards base and inner margin; an indistinct curved pale

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whitish band from costa at two-thirds to inner margin at three-fifths; cilia and spots as in forewings.

Intermediate between *falernaria*, Gn., and *smerintharia*, Felder, but differs from both through absence of markings of forewings.

One specimen from Port Lincoln and one specimen at light at Parkside on April 17, 1890.

MON. FALERNARIA, *Gn.*

I have one specimen (male) from Port Lincoln. Taken by Rev. Thos. Blackburn.

MON. VINARIA, *Gn.*

I have two specimens from Reedbeds and two from Blackwood, taken in March, 1890, and February 27, 1891, beaten from dry bush, also one from Belair, taken November 3, 1891.

DICHROMODES, *Guenee.*

DICH. PTILOMACRA, sp. nov.

Male and female, 26 mm. Head and thorax whitish, irrorated with dark-fuscous. Palpi 6 to 8, whitish, strongly irrorated with rough dark-fuscous scales, beneath darker, at base and towards apex whitish. Antennæ whitish, sharply annulated with dark-fuscous, pectinations nearly 12. Abdomen whitish-ochreous. Legs fuscous, posterior pair whitish, tarsi infuscated. Forewings triangular, costa arched towards base, hindmargin bowed; fuscous densely irrorated with whitish, and with scattered darker fuscous scales; four small slightly raised tufts of raised scales, black edged with white; first at one-fourth beneath costa, second in disc before middle; third in disc above middle; fourth on inner margin at about one-fourth; above the third tuft is a linear cheese-coloured streak, obscurely edged above with whitish; first line whitish from one-fourth of costa, angulated outwards so as to touch first and second tufts and ending on fourth; a straight white line from costa at three-fourths to near anal angle, sharply dentate throughout, edged anteriorly with blackish; a broad cheese-coloured streak from the dentate line to second tuft; another similar streak from the line parallel with inner margin nearly to base; these streaks are separated by streaks of ground-colour of about the same width; a broad cheese-coloured streak from apex to anal angle, suffusedly irrorated with whitish on costa; subterminal line white, straight, slightly dentate; veins between this and hindmargin streaked with cheese-colour; a waved blackish interrupted hindmarginal line: cilia whitish-fuscous, very distinctly barred with black and white, especially on underside. Hindwings fuscous-grey, darker posteriorly; a

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darker hindmarginal line: cilia fuscous-grey, basal-half slightly darker.

Blackwood; four specimens, 8th December.

The most remarkable of the genus, nearest *D. steropias*, Meyr., but differs in length of palpi, and especially antennal pectinations of male; the antennæ are also sharply annulated, the streaks of cheese-colour are also conspicuous characters. In addition to the above I have taken the following species:—

Dich. ainaria, *Gn.* Blackwood and Highbury. Common.

Dich. anelictis, *Meyr.* Blackwood and Highbury. Common.

Dich. obtusata, *Walk.* Blackwood; common. Highbury; scarce.

Dich. explanata, *Walk.* Teatree Gully and Blackwood. Several specimens.

Dich. sigmata, *Walk.* Two specimens. Highbury.

Dich. orectis, *Meyr.* Highbury and Blackwood. Several specimens.

Dich. consignata, *Walk.* Two specimens—one at Clarendon, one at Highbury.

Dich. stilbiata, *Gn.* Two specimens. Clarendon.

BOARMIADÆ.

Stibaroma, *Meyrick.*

Stib. trigramma, sp. nov.

Male, 35 to 40 mm. Head, palpi, and thorax ashy grey-whitish; thorax with a black transverse line, interrupted in middle. Antennæ whitish, pectinations reddish-fuscous. Abdomen white, base of segments broadly black. Anterior and middle legs blackish, ringed with white; posterior pair whitish, slightly infuscated; tarsi with whitish apical rings. Forewings elongated triangular, costa gently arched, apex round-pointed, hindmargin waved, bowed, oblique; ashy grey-whitish, minutely irrorated with black; a black suffusion at base; a reddish-ochreous spot not touching inner margin or base immediately beneath this; three black transverse lines; first from one-fourth of costa to one-third of inner margin, acutely angulated inwards near inner margin; second somewhat suffused from near one-half of costa to beyond one-half of inner margin, angulated outwards in middle; a transverse black discal dot; third line from three-fourths of costa to three-fourths of inner margin, strongly angulated throughout, with a bidentate projection outwards in middle, sometimes obscurely edged with whitish; a reddish-ochreous suffusion near anal angle, and another resting on projection above middle; a white dentate subterminal line; sometimes the median vein and three branches are strongly outlined with black as far as

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this line; hindmarginal line waved: black; cilia ashy grey-whitish: base whiter, with black spots at extremities of veins. Hindwings rounded; slightly sinuate beneath apex and at anal angle; whitish; a black linear discal dot; a blackish submarginal line; a broad black hindmarginal band, broader at apex: cilia white, with black dots at extremities of veins.

Female, 40 to 45 mm. Differs only from male in having first line edged anteriorly with whitish; the second one almost obsolete, and the third more distinctly edged with whitish. The reddish-ochreous suffusions are almost obliterated, and the hindmarginal bands of the hindwings are much paler.

Blackwood; twenty-five specimens early in May and June, beaten from the so-called stringybark. The insects frequent only the tallest trees, and are very sluggish, and generally fall straight to the ground when beaten out.

ŒCOPHORIDÆ.

PALPARIA, *Wing.*

PALPARIA LEUCOSTA, sp. nov.

Male, 15 mm.; female, 22 mm. Head light brownish-fuscous, face lighter. Antennæ light-fuscous, base whitish. Palpi with second joint dense, broadly triangular, whitish-ochreous, strongly carmine tinged beneath, terminal joint short. Thorax bright carmine-pink, finely sprinkled with slaty-fuscous; anteriorly rather broadly suffused with light brownish-ochreous. Abdomen dark fuscous, margins of segments pale whitish with silvery reflections, anal tuft of female pale ochreous. Anterior and middle legs dark fuscous, slightly sprinkled with whitish; posterior legs pale ochreous-whitish. Forewings moderate, costa evenly arched, apex acute, very slightly produced; hindmargin sinuate beneath apex, thence obliquely rounded; bright carmine-pink, minutely irrorated with slaty-fuscous, more especially on middle of disc and middle of inner margin, where it tends to form indistinct patches; costal edge narrowly ochreous-whitish from base to two-thirds, attenuated posteriorly; an ochreous-white straight streak running from fold at two-thirds to anal angle, attenuated anteriorly; inner margin edged with ochreous-whitish more strongly at base: cilia slaty-grey with silvery reflections, darker at apex, where the ground-colour has a tendency to go through it. Hindwings dark fuscous, darker towards apex; cilia lighter.

Nearest *Palp. eonephella*, Meyrick, and *Palp. theophila*, Meyrick; but differs from both by the fuscous hindwings. The fold of the forewings is very strongly produced in the species described.

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One specimen (male) on trunk of *Casuarina quadrivalvis* at Baker's Gully, in November; three female specimens from *Leptospermum myrsinoides* at Blackwood, in October and November.

HYDRIOMENIDÆ.

HYDRIOMENA, *Hb.*

HYD. GYPSOMELA, sp. nov.

Male and female, 28-30 mm. Head, palpi, thorax, and abdomen dark fuscous; palpi, one. Legs white, sprinkled with fuscous; tarsi banded with black and white. Forewinge triangular, hindmargin waved, bowed, oblique; white, with ths veins pinkish-tinged, especially near hindmargin, a dark fuscous basal patch from costa at one-sixth to inner margin at one-sixth; outer edge straight; a dark fuscous median band, in male broken; margins black, anterior margin from one-third of costa to one-third inner margin, outwards curved and connected with the basal patch by a streak along costa; an indistinct black discal dot; posterior edge from three-fourths of costa to two-thirds inner margin, with a moderate bidentate projection in middle; a blackish mark on costa before apex, leaving costa whitish; an ill-defined hindmarginal suffusion, in some specimens continued along veins; a blackish hindmarginal line interrupted by veins with coppery fuscous; cilia dark fuscous, base darker. Hindwings light fuscous, in female with a purplish sheen, in male more whitish; an indistinct median band, more defined on inner margin; hindmarginal line and cilia as in forewings.

A very distinct species; the broken band of male may not be a constant character, allowance must be made for this, as I possess but one specimen of that sex taken at Blackwood, and three females taken at Parkside at light.

XANTHORHŒ, *Hubner*:

XANTH. PARADELPHA, sp. nov.

Male, 28-30 mm.; female, 30-32 mm. Head, palpi, thorax, and abdomen fuscous-grey, minutely sprinkled with black; thorax with two more or less distinct transverse black lines. Abdomen with a double series of black dorsal spots. Palpi with the base white, about two. Legs fuscous above, whitish beneath; tarsi ringed with white. Forewings triangular, hindmargin rather waved, slightly bowed, oblique; brownish-ochreous, with cloudy whitish transverse lines; outer edge of basal patch marked with a nearly straight white line; anterior margin of median band marked by a well-defined twice dentate double white line from before one-third of costa to two-fifths of inner margin; posterior

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margin from three-quarters of costa to two-thirds of inner margin, edged by a broad well-defined white line, slightly curved near costa and strongly angulated outwards in middle, sometimes interrupted by a fuscous median line, and posteriorly usually edged by a well-defined black line; the median band usually contains an irregular subtriangular patch of lighter ground-colour, edged with darker, and containing a black discal dot; subterminal line dentate, white, slender, nearly straight; hind-marginal line black, slightly interrupted; cilia fuscous, sprinkled with whitish, forming faint bars, terminal-half lighter. Hind-wings with hindmargin rounded, waved, light-fuscous, slightly ochreous tinged; median band of four grey lines, posterior angulated in middle; subterminal line obscurely whitish; hind-marginal line and cilia as in forewings.

Nearest to *vacuaria*, Gn.; but besides differing in the ground colour it may be immediately known by the broad white posterior median line.

Common at Blackwood and at Parkside in February and March; also from Victoria.

Xanth. hyperythra, sp. nov.

Male, 25 mm.; female, 27-30 mm. Head, palpi, and thorax dark fuscous; head mixed with reddish, terminal joint of palpi whitish, palpi two. Antennæ whitish, pectinations six and eight. Abdomen grey-whitish, minutely sprinkled with fuscous, with a double row of suffused dark fuscous dorsal dots. Legs grey-whitish, slightly infuscated. Forewings triangular, hindmargin slightly waved, bowed oblique; dark fuscous, irregularly irrorated with ochreous-whitish, in some specimens bright golden ochreous; costal edge irregularly strigulated with ochreous-whitish; basal patch indistinct, darker than ground colour; outer edge indicated by a light indistinct line from one-sixth of costa to one-sixth inner margin, curved near costa; median band darker, containing a linear black discal dot, and indications of two or three waved darker transverse lines; anterior edge limited by a whitish interrupted line, distinctly double in some specimens on inner margin, from one-third of costa to one-third inner margin, slightly curved outwards; posterior edge limited by a much more distinct whitish-ochreous line, from two-thirds of costa to two-thirds of inner margin, angulated outwards below costa and at middle; a light suffusion on costa immediately beyond this line; a pale streak from apex nearly to first angulation of posterior line, edged beneath with a fuscous shade; subterminal line whitish, indistinct; all veins near hindmargin suffused with fuscous reddish; a blackish hindmarginal line interrupted by veins: cilia fuscous reddish, terminal half redder, with a paler red line. Hindwings

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with hindmargin rounded, waved, greyish, with a reddish reflection, paler towards base; an indistinct median band angulated in middle; hindmarginal line and cilia as in forewings.

Underside— The whole of the underside suffused with dull reddish, more prominent on the veins, less strongly towards inner margin of forewings.

A very variable insect; in some specimens the markings are almost obliterated by the darker ground-colour; the reddish colouring of the underside is a noticeable character.

Blackwood, Highbury, and Parkside, mostly at light; November to March; also from Victoria.

XANTH. XANTHOSPILA, sp. nov.

Male, 25 mm. Head, abdomen, and thorax ochreous-whitish, sprinkled with fuscous. Abdominal segments paler, with an indistinct double series of fuscous dorsal spots. Antennæ ochreous-whitish, sharply annulated with black, pectinations about seven, continued to apex. Legs fuscous, tarsi and tibiæ banded with ochreous-whitish. Forewings triangular; hindmargin waved, slightly bowed, oblique; light ochreous-fuscous, with whitish-ochreous markings; a curved blackish line at about one-fifth; median band limited by two well-defined lines; anterior from costa at one-third to one-third inner margin, slightly angulated outwards beneath costa, thence strongly dentate inwards beneath middle, anteriorily margined by a curved series of blackish dots on veins somewhat edged with orange; a black discal dot; median band contains two or three darker lines, especially on costa; posterior from three-fourths of costa to three-fourths of inner margin curved outwardly near costa, and with a strong bidentate projection in middle, and strongly sinuate inwards beneath this so as to nearly touch anterior line; an irregular row of blackish dots anteriorly suffusedly-edged with orange; a subterminal line, well-defined, strongly dentate throughout; a waved slightly interrupted blackish hindmarginal line: cilia ochreous-whitish, basal-half fuscous, with darker spots at extremities of veins. Hindwings with hindmargin rounded, waved; pale whitish-ochreous, slightly fuscous-tinged; a minute blackish discal spot; indications of two or three waved transverse lines; a whitish subterminal line; a blackish waved hindmarginal line, hardly interrupted: cilia as in forewings.

Bears a somewhat superficial appearance to *Hydriomena interrupta*, Gn. Three males at Blackwood in February.

I have also taken :—

Xanth. subidaria, *Gn.* Parkside, Highbury, Blackwood, and Belair.

Xanth. vacuaria, *Gn.* Blackwood and Parkside.

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Xanth. extensata, *Walker*. Blackwood.
Xanth. heliacaria, *Gn.* Blackwood. Mostly at light.
Xanth. vicissata, *Gn.* Blackwood.

GEOMETRIDÆ.

Iodis, *Hubner*.

Iodis ipomopsis, sp. nov.

Female, 30-33-40 mm. Head and face green, fillet white. Crown green. Palpi short, carmine, whitish beneath. Antennæ white, terminal half crimson. Thorax green. Abdomen green, sides and apex whitish. Anterior legs light crimson, middle and posterior whitish, somewhat tinged with crimson-fuscous. Forewings with the costa straight, arched towards apex; hindmargin nearly straight, oblique; light bluish-green; costa narrowly pale ochreous-whitish, crimson at base and at apical fourth; lines slender, dentate, whitish; tolerably distinct; first from beneath one-third of costa to one-third of inner margin; a dark green discal dot, sometimes indistinct; second line from two-thirds of costa to two-thirds inner margin; cilia pale crimson, base paler. Hindwings with hindmargin bent on vein 4: first line absent; discal dot, second line, and cilia as in forewings.

Four specimens from Balhannah, and one at Belair, beaten from *Acacia pycnantha* in November. Between *dichloraria*, Gn., and *vertumnaria*, Gn.; but differs from both by its green head and face and absence of dorsal line of thorax, &c.

Hypochroma, *Gn.*

Hypoch. eugramma, sp. nov.

Male, 36 and 38 mm. Head and palpi light grey, terminal joint of palpi black. Antennæ fuscous. Thorax light grey, sprinkled with black and white, with three distinct transverse black lines, one on collar, one anteriorly, and one posteriorly, latter interrupted in middle. Abdomen light grey, segments black, legs black, ringed with white. Forewings triangular. Costa sinuate, apex almost acute, hindmargin obliquely rounded, crenulate; grey, sprinkled with black, with white scales predominating in discal area; lines black, well defined; a transverse streak at base, and another immediately beyond, both straight; first line from before one-third of costa to before one-half of inner margin almost straight, slightly bent in below middle, rather thicker on costa; ground-colour from base to slightly beyond this line smoky grey; a black linear discal streak; second line from about three-fourths of costa to anal angle, strongly curved inwards below middle, posteriorly edged by a fine white line; whole of area beyond this smoky brown, except a fine dentate white line from near apex to

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anal angle; hindmarginal line black; cilia alternately grey and white. Hindwings as forewings; basal line indistinct; first line parallel to first line of forewings extending only half across the wing; second line closely beyond this from costa to anal angle, nearly straight; cilia and hindmarginal line as in forewings. Underside—Pale whitish grey, with scattered black scales; a broad black costal streak from base to about one-fourth; a linear discal streak; an outwards curved blackish line from two-thirds of costa towards but not reaching anal angle, posteriorly bounded by a dark smoky shade, enclosing two white teeth before apex. Hindwings as forewings; a transverse discal streak; a broad blackish hindmarginal band, edged anteriorly by a fine black line; posteriorly lighter.

Two specimens taken at light, at Parkside, in February. Very distinct by the well-defined lines; intermediate between *paratorna*, Meyrick, and *diffundens*, Lucas.

XYLORYCTIDÆ.

Cryptophaga, *Lewin.*

Cryptophaga Blackburnii, sp. nov.

Female, 45 mm. Head, palpi, antennæ, and thorax ochreous-whitish; head more ochreous on crown. Abdomen yellowish-grey, second segment dull orange, base of other segments narrowly whitish, suffused above with dull orange (anterior legs broken, middle and posterior whitish-ochreous, tibiæ and tarsi pale crimson. Forewings oblong, posteriorly dilated, costa gently arched, apex obtuse, hindmargin obliquely rounded; 2 from three-quarters; yellowish-grey-whitish, scantily strewn with black scales from base to two-thirds, except along costa; extreme costal edge pale yellowish; a moderate roundish orange spot distinctly edged with minute black scales, in disc beyond one-third; a second more ovate, on fold below middle, and a third more suffused beyond middle, both tending to be suffusedly edged with minute black scales: cilia yellowish-grey-whitish, darker at base. Hindwings grey-whitish, more ochreous-tinged towards base; 6 and 7 from a point; cilia whitish, mixed with fuscous.

One specimen received from Rev. Thos. Blackburn, to whom I have dedicated it; taken at Port Lincoln.

Crypt. ochroleuca, sp. nov.

Male, 45 mm. Head, palpi, thorax, and abdomen whitish-ochreous; base of palpi internally blackish, second segment of abdomen distinct orange-red. Legs ochreous-whitish, anterior and middle distinctly pinkish-tinged above; tarsi black, with white rings at apex of joints. Forewings oblong, posteriorly

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somewhat dilated; costa moderately arched, apex obtuse; hindmargin rather obliquely rounded; whitish-ochreous; a black dot in disc at one-third; a second, double, on fold beneath middle, and two others transversely placed, and connected by a fine black line in disc at three-fifths; a row of black spots along hindmargin and apical fourth of costa; 2 from five-sixths; cilia dark fuscous, base somewhat paler, especially towards anal angle. Hindwings and cilia shining white; cilia with black spots at termination of veins, except on anal angle; veins 6 and 7 from a point.

Between *lurida*, Meyr., and *sarcinota*, Meyr.; differs from the former chiefly by the absence of the spots on cilia of forewings, and from the latter by the different ground-colour and other minor points.

One fine specimen from *Eucalyptus sp.* at Blackwood in middle of February.

CRYPT. DELOCENTRA, *Meyrick.*

Male, 26-30 mm. Differs from female in having extreme costal edge blackish; the hindwings are distinctly black, with snow-white cilia. In some *female* specimens the hindwings are strongly suffused with blackish, and some specimens measure 54 mm. in expanse.

Thirty-two fine specimens, male and female, at a street lamp at Parkside in December. I have also seen specimens from Queensland and Sydney, so that it would appear to have a wide range.

CRYPT. IRRORATA, *Lewin.*

Two fine male specimens from Reedbeds, from *Casuarina quadrivalvis.* Hitherto not known from South Australia.

LICHENAULA, *Meyrick.*

LICH. SELENOPHORA, sp. nov.

Male and female, 25-28 mm. Head and thorax ashy-grey-whitish. Face white. Palpi whitish, irrorated with fuscous, terminal joint fuscous. Antennæ fuscous, base whitish, sharply annulated with white, ciliation one. Abdomen grey-whitish, abdominal segments lighter, anteriorly edged with reddish-ochreous bands. Legs whitish, anterior and middle tinged with dark fuscous. Forewings oblong, posteriorly dilated, costa gently arched, apex rounded, hindmargin straight, oblique; 7 to hindmargin immediately below apex; ashy-grey whitish, irrorated with black, the coalescence of which tends to form obscure markings, leaving costal edge snow-white, from near base to near apex; an irregular suffusion in disc; a streak from base angulated downwards towards inner margin, but not touching it, at one-fifth thence obscurely continued along fold to beyond middle; a moderate irregular suffused circle, anterior edge more pro-

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nounced immediately above anal angle, enclosed space almost white; a whitish apical patch obscurely continued along hindmargin to anal angle; a suffused blackish hindmarginal line; cilia ashy-grey, basal-half darker. Hindwings distinctly sinuate beneath apex; grey-whitish, slightly ochreous-tinged, much lighter towards base; cilia whitish, base yellowish-tinged, with a fuscous parting-line near base.

Rather variable in markings and intensity of colouring, the costal streak and curious mark above anal angle are distinct characters. Nearest to *laniata*, Meyr. Eighteen specimens beaten from *Banksia marginata*, at Blackwood, in November.

Xylorycta, *Meyrick.*

Xyl. leucophanes, sp. nov.

Male and female, 24-30 mm. Head, thorax, and abdomen shining white. Abdominal segments obscurely reddish, anal tuft whiter Palpi above white, second joint beneath fuscous, except towards base. Antennæ fuscous. Anterior and middle legs black, beneath white; posterior tibiæ and tarsi pale-greyish-ochreous, slightly infuscated. Forewings oblong, hardly dilated costa gently arched on basal-half, thence straight, apex obtuse, hindmargin obliquely rounded; shining snow-white; costal edge blackish from base to near apex, posteriorly attenuated; cilia shining snow-white. Hindwings pale grey-whitish, darker towards apex; cilia shining snow-white, with a faint grey median line. Underside of wings smoky fuscous. Hindwings paler; cilia white.

Five specimens bred from *Hakea rugosa*, the larvæ form conspicuous galleries of rough mud-coloured silk and refuse, and the imago emerge at intervals during December and January. Nearest to *orectis*, Meyrick. My specimens were obtained at Highbury; a remarkable coincidence is, that all the specimens emerged on consecutive Sundays, generally at about 7 p.m.

Phylomictis, *Meyr.*

Phyl. monochroma, sp. nov.

Male, 25 mm. Head, antennæ, palpi, and thorax black, palpi internally whitish. Legs dark-fuscous, whitish beneath; posterior pair whitish. Abdomen reddish-fuscous, segments obscurely whitish. Forewings elongate, costa gently arched, apex round-pointed; hindmargin obliquely rounded; black, without markings; a large obscure blotch of whitish scales about middle of wings, nearer inner margin than costa: cilia dark fuscous sprinkled with darker. Hindwings grey; darker posteriorly; cilia grey, with an indistinct darker line.

One specimen at Parkside in March. Not to be confused with any other.

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List of South Australian Species of Kangaroos and Wallabies.*

By A. Zietz, Assistant Mus. Director.

[Read March 1, 1892.]

Kangaroos.

Macropus giganteus, *var. typicus.*

Great Grey Kangaroo, Scrubber, &c.
All Australia, except the extreme north.

Macropus giganteus, *var. melanops.*

Black-faced Kangaroo. Apparently a dwarf *form* of the above. The two live side by side in the same district.
Eastern and South-Eastern Australia *(Oldfield Thomas)*; Ninety-mile Desert, Humbug Scrub (Public Mus.).

Macropus fuliginosus.

Tasmanian Great Kangaroo *(Oldfield Thomas).*
Kangaroo Island (Public Mus. S.A.).

Macropus robustus.

Wallaroo; Euro (syn., *erubescens). (Oldfield Thomas).*
Port Augusta and 400 miles north of Adelaide *(Oldfield Thomas;* Winnininnie *(*(Public Mus.).

Macropus rufus.

Great Red Kangaroo.
Eastern, South-Eastern, and South Australia *(Oldfield Thomas).*

Large Wallabies.

Macropus ruficollis *(var. typicus).*

Mount Gambier district (Public Mus.).

Macropus Greyi.

Grey's Wallaby; Toolatsche; Brush-tailed Kangaroo, &c.
South-East of South Australia.

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* The names adopted from the British Museum Catalogue of the Marsupialia by Oldfield Thomas; London, 1888.

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Small Wallabies.

Macropus Eugenii.

Dama or Kangaroo Island Wallaby.
Still numerous on Kangaroo Island.

Petrogale xanthopus.

Yellow-footed Rock Wallaby.
South Australia (rocky districts).

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Further Notes on Australian Coleoptera, with Descriptions of New Genera and Species.

By the Rev. T. Blackburn, B.A.

[Read May 3, 1892.]

XI.

The species described in the following pages are a somewhat miscellaneous aggregate, some of them having been collected by myself, and others having come into my hands for description from various sources. Among the most interesting are a number of *Coccinellidæ*, collected by Mr. A. Koebele, agent of the United States Department of Agriculture, during a tour which that gentleman has been making with a view of investigating the depredations of that family on scales and other enemies of plant-life. Mr. Koebele has placed in my hands for determination the species that he has collected, among which are a considerable number of novelties, as will be seen on reference to the following pages.

CARABIDÆ.

TACHYS.

I hesitate a little in referring the following species to this genus on account of the sutural stria not being recurved, but it presents all the other distinctive features of *Tachys*, and is so extremely like some species (*e.g.*, *T. Flindersi*, Blackb.) that have the recurved stria that I hardly think it can rightly be regarded as a new generic form on that character alone.

T. Yarrensis, sp. nov. Modice elongatus; minus convexus; nitidus; ferrugineus, capite infuscato; antennis sat elongatis, submoniliformibus; prothorace transverso, canaliculato, postice minus angustato, lateribus antice sat fortiter rotundatis postice vix sinuatis, angulis posticis rectis; elytris substriatis, striis sat fortiter punctulatis, sculptura nec apicem nec latera versus obsoleta; stria recurva nulla. Long., 1 l. (vix); lat., $\frac{5}{10}$ l.

At once distinguishable from its allies by the elytral sculpture not becoming obsolete towards the sides and apex, and by the absence of a recurved stria.

Victoria; Upper Yarra; sent by C. French, Esq.

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STAPHYLINIDÆ.

QUEDIUS.

Q. pictipennis, sp. nov. Sat robustus; sat nitidus; niger, subiridescens, elytris externe rufo-marginatis et utrinque vitta obliqua rufa ab humero ad angulum suturalem producta ornatis, antennis piceis basi rufis, pedibus piceis; capite transverso, punctura magna utrinque in oculi margine et 3 aliis postice instructo, oculis magnis; prothorace vix transverso, antrorsum a basi sat fortiter angustato, antice truncato, angulis posticis cum basi omnino rotundatis; elytris quam prothorax vix longioribus sat crebre minus fortiter punctulatis; abdomine in medio antice vix manifeste, postice et ad latera sparsim fortiter punctulato. Long., 3 l.

The punctures on the prothorax are on either side as follows:—two close to the front margin, one in the lateral margin behind the middle, several on the base, one on the front part of the disc near the middle, and three arranged in a triangle also on the disc, but nearer to the lateral margin and the base. The antennæ are moderately elongate, joint 1 the longest, 2 and 3 about equal in length (longer than the following joints), 7-10 gently transverse. In size and build resembles *Q. ruficollis*, Grav., but quite differently coloured, with the elytra much more closely punctulate, the prothorax and abdomen very differently punctured, &c.

Victoria; Dandenong Ranges; given to me by C. French, Esq.

HYPEROMMA.

The recent acquisition from Mr. French of an example (taken in the Dandenong Ranges, Victoria) referable to this genus has enabled me to ascertain somewhat certainly that the examples referred to by me in Tr. Roy. Soc., S.A., 1891, p. 70, as possibly *H. lacertinum*, Fvl. are not that species. The specimen recently acquired is very distinct from those mentioned in my former paper, and agrees with the characters of *H. lacertinum* much more satisfactorily than they do. Indeed I am not sure that the latter ought not to be regarded as forming a new generic type on account of their eyes very distinctly smaller and less entirely situated on the upper surface of the head (they are, however, much more so than in *Scimbalium*, *Lathrobium*, &c.), and the anterior tarsi of the male quite strongly dilated; the prothorax too is much less strongly narrowed hindward. As however the eyes are distinctly nearer in position to those of *Hyperomma* than of *Scimbalium*, the elytra very small and narrow, and the insect apterous, I do not see any objection to leaving this species in *Hyperomma* with the remark that it has much the facies (and tends towards the characters) of *Scimbalium*. I characterize it below.

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H. abnorme, sp. nov. Apterum; angustum; nitidum; convexum; antice parce pilosum, abdomine densius pubescenti; piceum, capite rufescenti; capite quam latiori distincte longiori, postice sparsim subfortiter punctulato et antice posticeque foveis sat magnis nonnullis impresso; prothorace quam caput parum longiori haud latiori, quam latiori duabus partibus longiori, postice leviter angustato, sparsim subtilissime (latera versus magis fortiter) punctulato, puncturarum majorum seriebus 4 (medianis singulis puncturis circiter 13 compositis) paullo confusis impresso, punctura sat magna utrinque inter seriem medianam et lateralem posita; elytris quam prothorax multo brevioribus paullo angustioribus, fortiter rugulose punctulatis et puncturis majoribus indistincte 3-seriatim impressis, latera versus obscure concavis.

Maris capite confuse longitudinaliter striato; tarsis anticis fortiter dilatatis; segmento ventrali apicali profunde angulatim anguste inciso, penultimo in medio profunde subrotundatim foveato; supra abdominis segmentis 2-4 in medio longitudinaliter leviter canaliculatis.

Feminæ capite angustiori haud striato; tarsis anticis vix dilatatis; segmento ventrali apicali postice sat angustato fere ut maris inciso, penultimo simplici; supra segmentis haud canaliculatis. Long., $5\frac{1}{6}$ l.; lat., $\frac{4}{6}$ l.

Victoria; Alpine district.

SCOPÆUS.

S. femoralis, sp. nov. Minus nitidus; minus depressus; pube sat subtili vestitus; rufo-ferrugineus, capite antennarum articulis intermediis abdomineque leviter infuscatis; crebre subtiliter minus distincte punctulatus; capite subelongato, sat quadrato, prothorace vix latiori; hoc minus elongato, basi manifeste biimpresso, supra linea mediana obsoleta sat nitida instructo; elytris prothorace vix latioribus, distincte brevioribus, femoribus anticis ad apicem dente antrorsum directo, et subtus in medio dente magno, armatis; tibiis anticis basi summa subito angustatis. Long., $1\frac{3}{6}$ l.; lat., $\frac{3}{10}$ l. (vix).

The uniformly-coloured rufous prothorax and elytra with clear testaceous-red legs and darker head and abdomen will at once separate this species from its previously described Australian congeners. It is also distinct by its less quadrate head, and its prothorax less narrow in proportion to the head and elytra (which cause it to appear not quite so slender a species), also by the elytra distinctly shorter (in proportion to the prothorax, and also in proportion to their own width) than in any of the species I

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have previously described. M. Fauvel's two species are very differently coloured, and no doubt differ in other respects, but the proportions of the segments, *inter se*, are not precisely stated.

The shape of the anterior femora is peculiar, and would probably justify generic separation; it is not sexual. The outline of the under surface is emarginate on the apical half and is angular at the inner limit of the emargination; the apex of the femur projects forward in a little spine or tooth.

N.S. Wales; Blue Mountains.

S. latebricola, Blackb.

S. dubius, Blackb.

S. obscuripennis, Blackb.

The front legs of the above three species are shaped as in *S. femoralis*. I regret that this character escaped my notice at the time I described them.

AMPHICROUM.

A. Adelaidæ, sp. nov. Rufo-testaceum, elytris dilutioribus (nonnullis exemplis plus minusve, præsertim juxta scutellum maculatim infuscatis), nonnullis exemplis abdomine plus minusve infuscato; antennis modice elongatis, articulo 4° quam 3^{us} breviori 5° æquali, 6-11 multo latioribus, 7-10 modice transversis, 11° quam 10^{us} longiori; capite utrinque vix manifeste impresso, crebre æqualiter sat fortiter punctulato; prothorace quam longiori fere duplo latiori, antice sat angustato, fere ut caput (sed minus crebre) punctulato, lateribus modice arcuatis, angulis posticis obtusis explanato-elevatis; elytris quam prothorax circiter duplo longioribus, vix aliter punctulatis, apice truncatis angulis externis rotundatis; abdomine crebre subtiliter punctulato; tibiis haud spinosis.

Maris (?) abdomine sat lato retrorsum gradatim angustato, segmento ventrali penultimo quam antepenultimus fere duplo longiori, apicali conico ad apicem anguste truncato.

Femina (?) abdomine magis parallelo, segmento ventrali penultimo quam antepenultimus sat longiori, apicali profunde inciso, parte interna protrusa subspiniformi subtus longitudinaliter canaliculata. Long., 1$\frac{3}{5}$—2 l.; lat., $\frac{3}{5}$ l.

Differs from *A. australe*, Fvl., *inter alia* by its evenly punctured head, from *A. spinipes* by its non-spinose tibiæ, from *A. cribriceps*, Fvl., by its longer antennæ, the ante-penultimate joints of which are less transverse.

S. Australia; near Adelaide, &c.; on flowers.

A. cribriceps, Fvl. I have a short series (all males) of a species taken on flowers in the Blue Mountains, N.S.W., which agrees very well with M. Fauvel's description of this insect except in

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respect of size. My examples are very small (Long., 1—1⅗ l.). The size of *A. cribriceps* is given as long. 4 mm. (=2 l., I suppose). On the other hand M. Fauvel says that *A. cribriceps* is much smaller than *A. australe* (the size of which is given as "Long. 4-5 mm.") which would hardly be a correct expression if an ordinary example of *cribriceps* were as large as a small one of *australe* (as is the case according to the published measurements).

ELEUSIS.

E. parva, sp. nov. Nitidissima; valde depressa; præter puncturas nonnullas setiferas fere lævis; pallide rufotestacea, antennarum (nonnullis exemplis) articulis intermediis et elytrorum disco (parte basali excepta) epipleurisque infuscatis; antennis sat gracilibus, articulo 3° quam ceteri angustiori, 4° 5° que piriformibus, 6-10 submoniliformibus ex ordine magis transversis, 11° quam præcedentes 2 vix breviori; capite plano fere æquali; prothorace antice fere capiti latitudine æquali, transverso, postice angustato, denticulo ante medium fere obsoleto seta nigra sat valida instructo; elytris quam prothorax paullo latioribus et manifeste longioribus. Long., 1 l.

New South Wales. Under bark of Eucalyptus on the Blue Mountains.

PAUSSIDÆ.

ARTHROPTERUS.

A. foveipennis, sp. nov. Piceo-rufus; sat nitidus; vix pubescens; capite sat crebre sat fortiter punctulato, inter oculos depresso; antennis latissimis, articulis 2°, 3°, 4° que ex ordine paullo latioribus, ceteris 4° latitudine æqualibus quam longioribus plus quam quater latioribus, ultimo quam præcedentes 3 conjuncti haud multo minori ad apicem late rotundato; prothorace quam longiori fere dimidio latiori, fortiter vix crebre punctulato (puncturis umbilicatis), disco depresso, latitudine majori longe ante medium posita, lateribus antice leviter rotundatis, angulis posticis rotundato-obtusis vix explanatis; elytris quam prothorax paullo minus crebre minus fortiter punctulatis, utrinque mox ante angulos suturales apicales fovea magna impressis, ad apicem in medio angulato utrinque sinuato (fere ut ⌣⌣); pygidio sat crebre sat fortiter punctulato; tibiis valde dilatatis, anticarum apice profunde triangulariter exciso (angulo apicali externo acuto), posterioribus 4 ad angulum apicalem externum oblique truncatis. Long., 5⅘ l.; lat., 1$\frac{2}{10}$ l.

The dilatation of the antennæ and legs in this species is re-

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markably strong; saving a fringe of rather close-set hairs running round the external margins, it is almost glabrous.

N. Territory of S. Australia; near Palmerston.

A. occidentalis, sp. nov. Pallide piceo-rufus; sat nitidus; vix pubescens; capite crebre sat fortiter punctulato inter oculos vix depresso; antennis valde dilatatis, articulis 2°, 3°, 4° que ex ordine paullo latioribus, ceteris 4° latitudine æqualibus quam longioribus circiter quater latioribus, ultimo præcedentibus 2 conjunctis sat æquali ad apicem late rotundato; prothorace quam longiori circiter quarta parte latiori, fortius sat crebre punctulato, late leviter canaliculato, latitudine majori longe ante medium posita, lateribus antice modice arcuatis postice vix sinuatis, angulis posticis rotundato-rectis vix explanatis; elytris crebre subtilius punctulatis, utrinque ad angulos suturales apicales fovea magna obscura obsolete impressis, apice late membranaceo postice obsolete tridentato; pygidio crebre subfortiter punctulato; tibiis sat fortiter dilatatis, anticarum apice triangulariter inciso (incisuræ angulis utrisque valde acutis), posterioribus 4 ad angulum apicalem externum breviter oblique truncatis. Long., 5 l.; lat., $1\frac{1}{6}$ l.

The pubescence is much like that of the preceding species, but the lateral fringes are less distinct. The membranaceous apex of the elytra is almost truncate, but when closely examined it is seen to be feebly prominent in an angular fashion at the middle and on either side.

Western Australia; Yilgarn.

SILPHIDÆ.

COLON.

C. Melbournense, sp. nov. Ovale; sat nitidum; fulvo-pubescens; piceum, elytris basin versus rufescentibus, antennis basi apiceque et pedibus testaceis; prothorace transverso distincte punctulato, angulis posticis obtusis; elytris ut prothorax punctulatis, stria suturali distincta; femoribus posticis (maris) late distincte dentatis. Long., 1 l.

The antennæ are about as long as the prothorax, joints 7-10 infuscate, the rest testaceous; joints 1-3 about equal in length, 1 and 2 stouter than 3, 4 shorter than 3, not quite so wide as long obconic, 5 slightly wider, not longer than wide; 6 strongly transverse, 7 very strongly transverse (about three times as wide as long), scarcely so long as 6; 8-10 not differing much *inter se* (evidently wider than and about twice as long as 7), 11 conic, evidently longer than 10. The mesosternum is strongly carinate.

Compared with the European *C. brunneum*, Latr., this species is more oval and less closely punctulate.

Victoria; near Melbourne.

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HISTERIDÆ.

PAROMALUS.

P. Ludovici, sp. nov. Ovalis; modice convexus; sat nitidus; piceo-brunneus, antennis pedibusque testaceis; capite sat plano sat crebre minus fortiter punctulato, stria frontali haud antice continuata; prothorace transverso, fere ut caput punctulato, antrorsum a basi arcuatim angustato, angulis posticis rectis, stria marginali antica integra; elytris quam prothorax magis fortiter paullominus crebre punctulatis, striis nullis nisi 2 lateralibus subobsoletis; propygidio subtilissime punctulato; pygidio (feminæ?) subgibbo sulcis obliquis 2 postice conjunctis instructo; prosterno bistriato; stria mesosternali biangulata; tibiis anticis fortiter dilatatis, denticulis valde minutis 6 extus armatis. Long., $\frac{3}{4}$ l.; lat., $\frac{2}{5}$ l.

The denticulations of the front tibiæ are so minute as to be scarcely distinct without the use of a compound miscroscope; four of them are larger than the other two. I do not think this species is very close to any previously described; it is probably nearest to *P. miliaris*, Mars., from Western Australia.

New South Wales; Blue Mountains.

PHALACRIDÆ.

LITOCHRUS.

L. Sydneyensis, sp. nov. Obovatus; nitidus; piceo-niger, antennis palpis pedibusque testaceis; capite prothoraceque vix perspicue punctulatis; elytris vix striatis, striis antice vix manifeste postice gradatim magis perspicue punctulatis, interstitiis fere lævibus. Long., 1 l. (vix); lat., $\frac{3}{5}$ l.

Differs from *L. alternans*, Blackb., *inter alia* by the absence of conspicuous punctures in the alternate interstices of the elytra; from *L. frigidus*, Blackb., by its entirely testaceous antennæ; from *L. lateralis*, Blackb., and *suturellus*, Blackb., by the almost entire absence of sculpture on the front half of the elytra; from *brunneus*, Er. (judging by the description of that species), by its darker colour and smaller size; and from its other previously described congeners by the want of a pattern on the elytra. It is a typical *Litochrus*, and therefore differs structurally in the tarsi from the species which I have attributed doubtfully to this genus.

New South Wales; on flowers near Sydney.

NITIDULIDÆ.

NOTOBRACHYPTERUS (gen. nov.).

Brachyptero affinis sed prosterno in processu distincto pone coxas anticas producto.

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I do not find any other difference from the genus *Brachypterus* in the species for which I propose this new name; they have (as in *Brachypterus*) two segments of the abdomen uncovered, bilobed maxillæ (I have been able to spare for dissection only one of the species described below, but it is reasonable to suppose the maxillæ of the others similar), head devoid of antennal sulci, basal joints of tarsi dilated. The species described below have altogether the facies of *Brachypterus*. I have not seen a true *Brachypterus* (with prosternum not produced behind the front coxæ) taken in Australia; but two species have been attributed to the genus:—*B. metallicus*, Reitter, from "Australia," and *testaceus*, Bohem., from "Sydney." The former of these I have certainly not seen; the latter is approached by an example in my collection from W. Australia, which, however, has the prosternum produced hindward, and therefore is not a true *Brachypterus*, but as it is quite possible that this character may have escaped the notice of M. Bohemann, and I am unable to specify any other well-defined distinction in the example before me, I regard it as possibly *N. testaceus*, and refrain from describing it, although I have little doubt that a comparison of types would show them to be two species.

N. australis, sp. nov. Ovalis [femina (?) latiori]; vix perspicue pubescens; supra brunneus, corpore subtus antennis pedibusque testaceis; capite antice transversim impresso prothoraceque parum subtiliter vix crebre punctulatis; hoc ad basin quam elytrorum basis paullo latiori, fortiter transverso, antice sat angustato angulis posticis rotundatis; elytris fere ut prothorax punctulatis. Long., $1\frac{1}{5}$ l.; lat., $\frac{7}{10}$ l.

Compared with *B. gravidus*, Ill., which it equals in size, this species is somewhat wider and more robust and less pubescent and differently colored; it also differs *inter alia* in the following characters; the punctures on the head and prothorax are distinctly larger and not so closely crowded together, those of the elytra are less deeply impressed as well as larger and less close, the propygidium is coarsely coriaceous rather than distinctly punctulate.

W. Australia; taken by E. Meyrick, Esq.

N. creber, sp. nov. Ovalis; subtiliter pubescens; piceo-niger, ore antennis pedibus elytrorum segmentorumque dorsalium apice et segmentis ventralibus apicalibus totis rufescentibus vel testaceis; capite prothoraceque crebre minus subtiliter punctulatis, hoc ad basin quam elytrorum basis paullo latiori, sat transverso, antice sat angustato, angulis posticis rotundatis; elytris crebre squamoso-punctulatis vel potius coriaceis; propygidio postice in medio angulato. Long., 1 l.; lat., $\frac{1}{2}$ l.

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This species seems distinct from the others of the genus and from *B. testaceus* and *metallicus* by its nearly black colour (which seems constant, as I have seen 7 or 8 examples). It is also distinct by the sculpture of its elytra which are coriaceous rather than definedly punctulate, although from a certain point of view fine punctures can be seen mixed with a network of fine wrinkles; the sculpture is altogether finer and feebler than on the elytra of the European species of *Brachypterus* known to me (e.g., *gravidus*, *pubescens*, *urticæ*). The shape of the hind margin of the propygidium, strongly bisinuate with the middle produced in a sharp angle (in one sex at any rate), also seems characteristic.

S. Australia; Port Lincoln district.

N. bifoveatus, sp. nov. Ovalis; vix perspicue pubescens; testaceus elytris indeterminate infuscatis; capite antice foveis 2 transversim positis impresso prothoraceque distincte subfortiter sat crebre punctulatis; hoc fortiter transverso, antice minus angustato, angulis posticis rotundatis; elytris subtilius subsquamose vix crebre punctulatis. Long., 1 l.; lat., ½ l. (vix).

This little species is distinguishable by the two well-defined and distinct round foveæ placed transversely on the line dividing the clypeus from the hinder part of the head. From the species which I take to be possibly *Brachypterus testaceus*, Bohem., and from *N. creber* it also differs by the much more distinct and less crowded puncturation of its head and prothorax. It is very near *N. australis*, Blackb., but differs by its smaller and narrower form, its different colour, the foveæ on its head (which in *N. australis* are replaced by a short transverse sulcus), the considerably more sparse puncturation of its head, and the evidently more quadrate form of its prothorax.

S. Australia; near Adelaide.

N. nitidiusculus, sp. nov. Ovalis; tenuiter pubescens; niger; antennis palpis pedibusque rufo-testaceis; capite sat æquali, sat crebre minus profunde nec subtiliter punctulato (certo adespectu subconcentrice rugato); prothorace fere ut caput punctulato et (certo adspectu) confuse rugato, fortiter transverso, antice sat angustato, angulis posticis rotundatis; elytris sat crebre minus profunde nec subtiliter subsquamose punctulatis. Long., 1 l.; lat., ½ l. (vix).

Var. minor, supra brunnescens.

A very nitid little species resembling *N. creber* in colouring, but differing from that species *inter alia* in its much feebler but less fine puncturation. From the other species described above it differs by the even surface of its head. From the insect mentioned above as possibly *B. testaceus*, Boh., it differs *inter alia*

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by the very much less close puncturation of its head, and from *B. metallicus*, Reitt., by the total absence of any metallic tone of colouring.

W. Australia; taken by E. Meyrick, Esq.

N. lilliputanus, sp. nov. Ovalis; tenuiter pubescens; brunneus, antennis palpis pedibusque dilutioribus; capite æquali subtiliter minus crebre punctulato; prothorace sat transverso, antice minus angustato, subtilissime sat sparsim punctulato, angulis posticis rotundatis; elytris subtiliter magis crebre subaspere punctulatis. Long., $\frac{7}{10}$ l.; lat., $\frac{2}{5}$ l. (vix).

Its extremely small size will distinguish this species from its allies. The even surface of its head associates it with *nitidiusculus*, *creber*, and the species I have called *testaceus?*, all of which are very differently punctured.

S. Australia; I am doubtful of the exact habitat, but believe it to be near Adelaide.

IDÆTHINA.

I. cincta, Blackb. I have recently received from M. Grouvelle an example of *I. Deyrollei*, Reitt., which M. Grouvelle informs me has been compared with the type. In describing *I. cincta* (Tr. R. Soc. S.A., 1891, p. 107) I expressed some slight doubt as to its generic identity with the typical species, which, however, M. Grouvelle's favour has proved to have no foundation. In fact, *I. cincta* is nearer to *Deyrollei* (even specifically) than I had supposed. Compared with the example of the latter (from N.S. Wales) which, M. Grouvelle has sent, its elytra are distinctly striated throughout, whereas, at any rate near the suture, there are no striæ in the N.S. Wales specimen. In *I. cincta* moreover the underside is much more closely punctulate; this is especially noticeable on the middle part of the metasternum which, in the example from M. Grouvelle, is very nitid and bears only very sparse and fine puncturation.

COLYDIIDÆ.

TRISTARIA.

I do not think there can be any doubt that the species described below should be referred to this genus, which has very strongly marked characters; the tetramerous tarsi, 2-articulate antennal club, very widely separated coxæ, and elongate basal ventral segment of *Bothrideres*, in combination with considerable elongation of the palpi and antennæ, partial exposure of the pygidium, slenderness of tibiæ, &c. The species described below agrees very well with the diagnosis of this genus in respect of all the above-named characters, but it has not "simple mandibles,"

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those organs being truncate at the apex, and having a short sharp piece projecting from the external angle of the truncation; nor does the labrum quite agree with the diagnosis which merely characterises it as "broad, rounded externally," whereas in the species before me it is narrowed from base to apex, with the sides little or not rounded, the surface set with numerous long fulvous hairs, and the apex deeply impressed above so as to give an emarginate appearance. These discrepancies do not seem sufficient to justify the creation of a new genus.

T. labralis, sp. nov. Oblonga; sub parallela; sub depressa; corpore subtus (meso- et meta-sternis nigris exceptis) antennis pedibusque obscure rufis nitidis, corpore supra subopaco pilis brevissimis fulvis sat dense vestito, lateribus breviter confertim fimbriatis; capite prothoraceque nigris crebre subtilius profunde punctulatis; hoc transversim quadrato utrinque in disco vix manifeste impresso, linea media vix notata, lateribus fere rectis, angulis sat rectis; elytris rufo-brunneis confertim subtiliter punctulatis, sculptura apicem versus vix obsoletescenti; corpore subtus subtilissime sparsissime, sternis ad latera multo magis fortiter subrugulose, punctulatis. Long., $1\frac{1}{4}$—$2\frac{1}{2}$ l.; lat., $\frac{1}{2}$—$\frac{7}{10}$ l.

The elytra are (very noticeably) still more closely and finely punctured than the prothorax; on the latter the punctures in some lights seem to run into fine wavy wrinkles placed more or less longitudinally. Apart from the structural characters mentioned above, this species seems to differ from the two previously described by its elytral sculpture scarcely if at all growing feebler near the apex, also by its colour.

Victoria; near Cheltenham; sent by C. French, Esq.

CUCUJIDÆ.

LÆMOPHLŒUS.

L. Australasiæ, sp. nov. Sat elongatus, postice nonnihil angustatus; depressus; nitidus; glaber; testaceus, elytris ante apicem fascia lata infuscata ornatis; fronte sat convexa, linea longitudinali mediana impressa; capite prothoraceque sparsim minus subtiliter punctulatis; hoc sat transverso, postice leviter angustato, utrinque unistriato, striis pone medium fovea profunda elongata impressis, lateribus vix arcuatis, angulis anticis dentiformibus, posticis obtusis; scutello transverso; elytris punctulato-striatis in disco utrinque longitudinaliter concavis, ad apicem conjunctim rotundatis.

Maris antennis quam corpus vix (feminæ tertia parte) brevioribus. Long., 1 l.; lat., $\frac{3}{10}$ l.

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The deep and elongate fovea into which the prothoracic striæ are dilated immediately behind the middle will distinguish this species, I think, from all its described Australian congeners. The wide blackish fascia occupying nearly all the apical half of the elytra furnishes another conspicuous character.

Victoria; taken by Mr French in the Dandenong Ranges.

CRYPTAMORPHA.

C. Macleayi, sp. nov. Minus elongata; sparsim longe pubescens; obscure brunneo-testacea, elyris circa scutellum et transversim pone medium plus minusve distincte infuscatis; capite sat opaco sparsim sat fortiter (nullo modo rugulose) punctulato, sulcis frontalibus subtilibus a lateribus longe remotis; prothorace leviter transverso crebre fere rugulose punctulato, lateribus subrotundatis vix crenulatis; elytris sat fortiter punctulato-striatis, interstitiis subtiliter seriatim punctulatis. Long., $1\frac{2}{3}$ l.; lat., $\frac{2}{3}$ l.

The most striking characters of this species appear to be the opacity of its head, the extreme fineness of the frontal sulci (especially the inner one), and the unusual width of the space that separates the inner sulci from the eye. I have named it after the late Hon. Sir W. Macleay.

N. S. Wales; Blue Mountains; not rare among dead leaves of *Eucalyptus*.

MYRABOLIA.

M. Lindensis, sp. nov. Testacea; subnitida; oblonga; subtiliter fulvo-pubescens; vix depressa; capite prothoraceque crebre subtilissime punctulatis; hoc subquadrato, leviter transverso, subtiliter reflexo-marginato, æqualiter leviter convexo, lateribus subparallelis, angulis posticis subacutis; elytris subtiliter punctulato-striatis, interstitiis subtilissime punctulatis et (præcipue marginem versus) subtiliter carinatis; corpore subtus confertim subtiliter punctulato. Long., $1\frac{1}{10}$ l.; lat., $\frac{2}{5}$ l. (vix).

The prothorax resembles in outline that of *M. Haroldiana*, Reitt., but is a little narrower, and has the hind angles quite sharply defined; it is considerably more finely punctured, and has no trace of an impression near the front. It differs also from *M. Grouvelliana*, Reitt. (of which M. Grouvelle has very kindly given me a type), by the much straighter sides of its prothorax, the much sharper hind angles and finer puncturation of the same and the closer puncturation of its metasternum.

The very fine slightly raised lines running down the elytra are not peculiar to this species, as I find them distinctly traceable in its two described congeners.

S. Australia; under bark of *Eucalyptus* near Port Lincoln.

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M. parva, sp. nov. Ferruginea; subnitida; oblonga; subtiliter fulvo-pubescens; vix depressa; capite prothoraceque subtiliter vix crebre punctulatis; hoc subquadrato sat transverso, subtiliter reflexo-marginato æqualiter leviter convexo, lateribus subparallelis, angulis posticis subacutis; elytris subtiliter punctulato-striatis, interstitiis subtilissime punctulatis et (præcipue marginem versus) subtiliter carinatis; corpore subtus confertim subtiliter punctulato. Long., $1\frac{1}{10}$ l.; lat., $\frac{4}{5}$ l. (vix).

The prothorax, in outline, resembles that of *M. Haroldiana*, Reitt., but has the hind angles distinctly sharper; it is devoid of the discal depression, and its puncturation is evidently less close. The shape of the prothorax distinguishes this species from *M. Grouvelliana*. From *M. Lindensis* it differs by its prothorax, evidently more transverse and (together with the head) considerably more strongly punctulate.

N. S. Wales; near Sydney.

M. Haroldiana, Reitt. The habitat of this species is given as "Australia;" I have taken an insect which agrees well with the description in various localities in S. Australia; under bark of *Eucalyptus*.

CRYPTOPHAGIDÆ.

CRYPTOPHAGUS.

C. gibbipennis, sp. nov. Sat elongatus, postice angustatus; minus convexus; ferrugineus, elytris circa scutellum et in apice infuscatis; pube fulva minus crebre vestitus; prothorace vix transverso, subfortiter sat sparsim punctulato, ante scutellum gibbo, lateribus fere rectis leviter sinuatis, angulis omnibus acutis; elytris juxta scutellum utrinque gibbis, ut prothorax punctulatis; tarsorum articulo primo sat brevi; abdomine plus minusve infuscato. Long., 1 l lat., $\frac{4}{5}$ l. (vix).

A ferruginous red species with the region of the scutellum and the apices of the elytra infuscate, or almost black. The gibbosity on the base of the prothorax seems to be outlined (except on the actual base, which it touches) by a feeble sulcus; the two gibbosities (placed one on either side of the scutellum) on the elytra are more conspicuous than that on the base of the prothorax. The antennæ laid back slightly surpass the base of the prothorax; their joints 3–8 are of about equal thickness and length (except that 3 is slightly longer than the others), 1 and 2 are much thicker but scarcely longer than 3, 9 and 10 strongly transverse and scarcely different *inter se*, 11 a little longer and scarcely transverse.

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This species is certainly near *Cryptophagus*, with which it agrees in its males being heteromerous, while the females are pentamerous. Its comparatively parallel and depressed form, and the nearly straight sides of the prothorax, which are quite devoid of inequalities, give it a somewhat different facies, but I do not find any satisfactory character on which to found a new genus for it.

Victoria; Dandenong Ranges (Mr. French); also Tasmania.

ATOMARIA.

A. eucalypti, sp. nov. Sat late ovalis; sat nitida; sat convexa; sparsim pubescens; ferruginea, antennarum clava et elytris (basi apiceque exceptis) obscurioribus; capite prothoraceque sat crebre subrugulose, elytris sparsim subtiliter, punctulatis; prothorace sat æquali, fortiter transverso, antice in medio late sat fortiter producto, ad basin marginato, antice quam postice paullo augustiori, angulis posticis acutis retrorsum directis; capite antice subelongato; antennis basi distantibus. Long., $1\frac{1}{4}$ l.; lat., $\frac{3}{5}$ l.

Possessing only a female of this species, I am unable to say positively that the male has pentamerous tarsi, placing it in *Atomaria*, but its general characters and superficial appearance are so decidedly of that genus that I have no hesitation in placing it there provisionally. The head rather strongly produced in front of the antennæ may perhaps suggest the want of a new generic name, but as the description of the Australian *Cryptophagidæ* has hardly been touched, it would be a mistake to form new genera at present on any but very strong characters. In my opinion it is always wiser for the describer of species to attribute to an existing genus any species that is not so distinct from the typical form as to render it probable that other workers would fail to look for it there, leaving generic questions as much as possible to those who make them a speciality, and as the present insect is so like an *Atomaria* superficially and structurally that no careful worker, having it before him, could fail to regard the probability of its having been attributed to that genus, my principle leads me to place it there instead of forming a new genus on slight characters.

The darkest part of the infuscation of this insect is on the elytra, where it is quite of a pitchy tone, and is fairly distinctly limited, taking the form of a very wide fascia, leaving about the basal and apical quarters of the elytra of the rufous ground-colour. The antennæ are very widely separated, and their club is unusually strong and abrupt; they are, in fact, suggestive of *Cryptophagus*, but the general appearance and the simple margins of the prothorax are out of harmony with that genus.

N. S. Wales; Blue Mountains; under bark of *Eucalyptus*.

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DERMESTIDÆ.

TROGODERMA.

T. Froggatti, sp. nov. Elongato-ovale; nigro- et rufo-hirtum; nigrum, antennarum stipite rufo, elytris ante medium fascia rufa (suturam haud attingenti) ornatis, lateribus apiceque rufis; subtilius sat sparsim punctulatum, sulcis antennariis latis minus profundis triangularibus, postice leviter clausis.

Feminæ (?) antennarum clava ovali 5-articulata (quam articuli 1-6 conjuncti multo longiori), hujus articulis 1-3 ex ordine latioribus, 4° quam 3^us^ paullo angustiori, ultimo quam præcedentes 2 vix breviori. Long., $1\frac{3}{5}$ l.; lat., $\frac{4}{5}$ l.

A very distinct species on account of the markings on its elytra; its prosternal sulci, while very distinct from the narrow sharply cut furrows of *T. Lindense*, Blackb., and its allies, are deeper than in the species which I have tabulated (Tr. Roy. Soc. S. A., 1891, p. 129) as having feeble prosternal sulci. In the tabulation in question this species would fall beside *T. Meyricki*, from which it differs *inter alia* by the markings on the elytra, and perhaps in the number of joints composing the antennal club in the male. I do not feel sure of the sex of the two specimens before me. The markings on the elytra are very like those of *Cryptorhopalum Australicum*, Blackb.

N. S. Wales; taken by Mr. Froggatt, near Yass.

T. singulare, Blackb. In my description of this species (Trans. Roy. Soc. S. A., 1891, p. 129, line 31) for "quam articulati, 1-4," read "quam articuli 1-4."

LAMELLICORNES.

ONTHOPHAGUS.

O. Geelongensis, sp. nov. Brevis; subnitidus; setis erectis vestitus; piceus (elytris dilutioribus) læte viridi-micans, colore viridi in clypeo corpore subtus tibiis tarsisque carente, antennis rufescentibus; clypeo confluenter ruguloso, capite postice prothorace et pygidio sat crebre sat fortiter punctulatis; elytris ad latera confuse fortiter sat crebre punctulatis puncturarum series 14 geminatim positas gerentibus, interstitiis vix convexis sat lævibus; tibiis anticis extus 4-dentatis.

Maris (?) capite transversim 2-carinato, carina antica in medio tuberculiformi. Long., $2\frac{1}{5}$ l.; lat., $1\frac{3}{5}$ l.

The interstices of the striæ on the elytra would be lævigate were it not for the rows of punctures being a little irregular, so that here and there one of their punctures is impressed out of line, and on an interstice. The rows of punctures are arranged

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in pairs, the two of each pair separated by a very fine stria, a rather wide interstice between each pair and the next pair. I have little doubt that the example before me is a male, but it is not certain owing to the want of an example of the other sex. I have not seen any other *Onthophagus* coloured as this, the general surface piceous inclining towards testaceous on the elytra, the whole upper surface with a rich green gloss, more noticeable in some than in other lights.

Victoria; near Geelong; in the S. A. Museum.

APHODIUS.

A. Frenchi, sp. nov. Obovalis; sat convexus; niger vel piceus nonnullis exemplis plus minusve rufescentibus; nitidus; clypeo antice late leviter emarginato; prothorace sat æqualiter punctulato; elytris profunde crenato-striatis, interstitiis parum convexis sparsim subtiliter punctulatis. Long., $1\frac{3}{5}$—2 l.; lat., $\frac{7}{10}$—$\frac{4}{5}$ l.

This little species is very like the European *A. pusillus*, Sturm, differing little from it except in the more evident emargination of the front of the clypeus, the much closer puncturation of the prothorax (the punctures of which are of uniform size, and about as large as the larger punctures on the prothorax of *pusillus*, though becoming a little finer close to the front margin), and the somewhat smaller teeth of the front tibiæ, the uppermost tooth being, moreover, a little more widely separated from the middle one. It agrees with *A. pusillus* in the following characters:—Scutellum small, setæ of the hind tibiæ elongate, prothorax margined behind and with blunt hind angles, mesosternum finely carinate.

This species is very distinct from all hitherto described as Australian, nor can I identify it as introduced from any other country, although in so enormous and widely distributed a genus as *Aphodius* it is difficult to be certain on this point.

S. Australia and Victoria; common.

A. Lindensis, sp. nov. Minus elongatus; subopacus, coriaceus; lividus, capite prothoracisque disco piceis, elytris obscure piceo-umbratis; capite prothoraceque sparsim fortiter punctulatis; illo æquali, clypeo antice sat reflexo late leviter rotundato; prothorace sat transverso postice haud marginato, lateribus antice fortiter rotundatis postice fortiter sinuatis; elytris fortiter striatis, interstitiis plus minusve convexis (1°, 3°, 5° que quam cetera magis convexis); tibiis anticis extus sat fortiter 3-dentatis; mesosterno haud carinato. Long., $2\frac{1}{6}$ l.; lat., $1\frac{1}{4}$ l.

Seems to be near *A. Candezei*, Har., but that species is

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described as being larger, with three tubercles on the head, and the basal margin of the prothorax entire.

The scutellum is moderately small (about the same size as in *A. Howitti*, Hope), and is concave and punctured in the basal part; the hind tibiæ are fringed with both long and short bristles; the prothoracic border extends along the base, on either side, very little within the hind angles, which are roundly obtuse; the legs are comparatively long and slender, the hind tibiæ only very moderately dilated at the apex, with their two transverse keels well marked (the lower one the stronger of the two); the elytra are roundly obtuse at the shoulders (much as in *A. Howitti*); the prothorax is nearly lævigate on a wide space down the middle. The markings on the elytra consist of longitudinal piceous blotches, and are scarcely marked in the type; probably they vary.

S. Australia; a single example from the Port Lincoln district.

N.B.—A very small example of *Aphodius* (long., 2 l.) in the S. A. Museum,—locality unknown,—scarcely differs from this species; it has a scarcely traceable indication of a tubercle on either side of the forehead, and may be the male.

ATÆNIUS.

A. mendax, sp. nov. Sat angustus; parallelus; nitidus, niger; vel nigro-fuscus, pedibus dilutioribus, clypei marginibus antennisque testaceis; clypeo rotundato-emarginato; capite sat crebre sat fortiter punctulato, prothorace æquali dupliciter (subtiliter et sat crasse) nec rugulose punctulato; elytris sulcatis, sulcis catenulato-punctulatis, interstitiis carinatis sparsim subtilissime punctulatis, humeris dentatis. Long., $1\frac{4}{6}$ l.; lat., $\frac{7}{10}$ l.

Near *A. australis*, Har., but differing in the much less close puncturation of the head and prothorax, in the absence from the latter of any trace of a median channel, and in the narrower sulci of the elytra.

Victoria; taken in Fern Gully by Mr. French.

A. torridus, sp. nov. Angustus; parallelus; nitidus rufo-brunneus; clypeo rotundato-emarginato; capite in medio gibboso, antice vix perspicue postice et ad latera distincte sat crebre punctulato; prothorace æquali, dupliciter (subtiliter et subfortiter) nec rugulose punctulato; elytris sulcatis, sulcis catenulato-punctulatis; interstitiis vix perspicue punctulatis, humeris dente perparvo armatis. Long., $1\frac{1}{5}$ l.; lat., $\frac{1}{2}$ l. (vix).

A very small species not closely resembling any of its previously described Australian congeners. I have compared it

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with the *Aphodiides*, from N. W. Australia, described by Sir W. Macleay, and find it quite distinct from them all.

N. Territory of S. Australia.

PROCTAMMODES (gen. nov.).

I propose this name as a substitute for *Proctophanes*, Har. (1861), the name *Proctophana* having been previously proposed by Lacordaire (1848) for a genus of *Clythrides*. I cannot find that this *double emploi* has been as yet corrected.

TROX.

T. Elderi, sp. nov. Latissimus; minus convexus; subnitidus; niger; capite crebre fortiter punctulato, haud tuberculato; prothorace quam longiori tribus partibus latiori, postice lobato, supra costis tuberculisque angustis inæquali (interstitiis planis in medio punctulatis latera versus granulatis), postice quam antice tribus partibus latiori, angulis posticis rectis, lateribus crenulatis; elytris confuse minus crebre granulatis et tuberculorum magnorum obtusorum seriebus 3 ornatis, lateribus leviter crenulatis; tibiis anticis extus 4- vel 5-dentatis, dente apicali plus minusve bifido. Long., 12 l.; lat., 8 l.

Differs from *T. Castelnaui*, Lansb., *inter alia* by the non-dentate lateral margins of its elytra; from *T. Dohrni*, Har., and *T. gigas*, Har., by its non-tuberculate head, &c.; from all three by its very wide and somewhat depressed form, and the numerous teeth on the margin of the front tibiæ; also differs from *T. Dohrni* and *Castelnaui* by the slenderness of the costæ and tubercles of its prothorax, which appear as linear elevations placed on a flat surface, and separated from each other by spaces at least two or three times as wide as each costa.

South Australia; taken by Professor Tate near Ooldea; also in the same region by Mr. Helms, of the Elder Exploration party.

T. gigas, Har. The commonest of the large species of *Trox*, which Dr. Sharp tells me is identical with the species labelled *T. gigas* in the British Museum, does not agree at all satisfactorily with the description of that species, from which it differs as follows:—The head is not bituberculate, but has a single transverse scarcely defined prominence at the base of the clypeus; the tubercles and costæ of the prothorax are not "angustuli," but are as wide as they can well be, there being no flat space at all between one and another of them; on the elytra the external (not the middle) row of tubercles is the shortest. In other respects this insect agrees with the description. I propose to call this form *T. Tatei* (? = *gigas*, var.).

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I have seen a large number of examples of the large species of *Trox* (*Megalotrox*, de Borre) all from South-Western Australia; but have not yet met with an example agreeing with the description of *T. gigas*.

T. eremita, sp. nov. Oblongo-ovalis; minus nitidus; niger antennis (articulo primo excepto) rufis, capite (infra clypeum) rufo-hirto, tibiis capillis elongatis rufis fimbriatis; capite crebre rugulose punctulato distincte bituberculato, antice triangulari; prothorace quam longiori fere duplo latiori, postice quam antice plus quam dimidio latiori, postice lobato (lobo ante scutellum rotundato), fere ut caput punctulato, supra costis minus gracilibus inæquali, lateribus modice explanatis vix manifeste trisinuatis, ante angulos posticos subrectos manifeste emarginatis; elytris seriatim granulatis et tuberculorum minus elevatorum seriebus circiter 8 ornatis (harum serierum 2^a, 4^a que tuberculis quam ceterarum majoribus instructis, 5^a, 7^a que tuberculis quam granuli adjacentes vix majoribus instructis); tibiis anticis externe tridentatis; processu prosternali modico, in medio acuminato. Long., 7—8 l.; lat., $4\frac{1}{3}$—$4\frac{1}{2}$ l.

Considerably like *T. Augustæ* in size and build, but with the elytra bearing rows of very distinct tubercles, many of which are fairly large, although only feebly protuberant; the tubercles near the base are more or less run together into a costiform appearance in the second and fourth series. I do not find any of the nitid spots on the elytra (distinct from the tubercles of the series) which are present in so many of the genus. Very distinct from *T. Augustæ* by the shape of the prosternal process also. The middle costæ of the prothorax are very much abbreviated behind. This species is probably near *T. dilaticollis*, Macl., in which, however, the prothorax is stated to be not at all narrower in front than at the base, and also perhaps near *T. Brucki*, Har., which, however, seems to be a much smaller species (long., $10\frac{1}{2}$ mm.), with the clypeus not angulated anteriorly.

Central Australia; MacDonnell Ranges.

T. quadridens, sp. nov. Oblongo-ovalis; sat opacus; niger, antennarum stipite rufo; capite infra clypeum obscure rufo-hirto, tibiis capillis elongatis rufis fimbriatis; capite obscure inæqualiter rugulose punctulato fortiter bituberculato antice vix angulato; prothorace quam longiori circiter dimidio latiori, postice lobato (lobo ante scutellum rotundato), postice quam antice circiter dimidio latiori, inæqualiter (hic confertim subtilius illic sparsius minus subtiliter) punctulato, supra costis sat robustis inæquali, lateribus fortiter trilobis, angulis posticis sat acutis; elytris undulatim sat

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fortiter longitudinaliter granuloso-punctulatis et tuberculorum nitidorum seriebus circiter 10 instructis (serierum 3ª, 5ª, 7ª, 9ª tuberculis quam ceterarum majoribus nec magnis, ceterarum quam granuli parum majoribus), latera versus plagulis nitidis planatis nonnullis ornatis; tibiis anticis externe quadridentatis, dente subapicali quam apicalis haud minore; processu prosternali fere truncato, in medio vix acuminato. Long., 6—6½ l.; lat., 4 l.

This species is remarkable for the very strong external teeth of its front tibiæ; the tooth next above the apex is quite as large as the apical one (which is bifid); the next above that is smaller but, nevertheless, quite a strong tooth (larger than that in most species of *Trox* which is next above the apical one); the uppermost is very small. The front tibiæ are thus very much as in the West Australian species, which I believe to be *T. stellatus*, Har., in which, however, *inter alia* the elytra are very differently sculptured.

South Australia; near Port Augusta.

T. Euclensis, sp. nov. Ovatus; opacus; niger, indumento griseo vestitus; capite fortiter minus crebre punctulato, tuberculis distinctis 2 instructo; prothorace quam longiori tertia parte latiori, antice quam postice tertia parte angustiori, postice trisinuatim lobato, ut caput punctulato, supra costis tuberculisque gracilibus inæquali (costa 2ª in medio interrupta, parte interrupta tuberculo nitido instructa), lateribus trisinuatim rotundatis, angulis posticis sat rectis; elytris subseriatim sat crebre granulatis et tuberculorum parvorum seriebus circiter 7 ornatis (tuberculis his hic illic plus minusve in costis brevibus conjunctis), plagulis nitidis hic illic sparsim dispersis; tibiis anticis externe trisinuatis vel obtuse tridentatis. Long., 5—7 l.; lat., 3⅘—4½ l.

This species is characterised by the following in combination; frontal tubercles very well defined, "second" prothoracic costa widely interrupted behind the middle, the centre of the gap being occupied by a small shining tubercle, "fifth" prothoracic costa represented by a small shining tubercle, all the prothoracic costæ very slender, sides of prothorax gently and somewhat trisinuately rounded, rows of tubercles on the elytra rather numerous, the alternate ones containing tubercles more or less larger than the intermediate ones (those of the second and fourth rows the largest); anterior tibiæ variable externally, in some examples somewhat obtusely tridentate, in others merely trisinuate. The prosternal process is sharply pointed behind.

S. Western Australia; Eucla, &c.

T. Augustæ, sp. nov. Oblongo-ovatus; minus nitidus; niger;

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capillis rufis elongatis in capite pedibusque setis brevibus rufis in elytris vestitus; capite fortiter nec crebre punctulato, sat concavo, vix tuberculato, antice subtriangulari fortiter reflexo-marginato; prothorace quam longiori plus quam dimidio latiori, antice quam postice fere duplo angustiori, postice fortissime trisinuato-lobato (lobo ante scutellum angulato), leviter minus distincte punctulato, supra costis inæquali (mediis 4 bene determinatis, ceteris fere obsoletis), lateribus valde explanatis postice leviter arcuatis antice sinuatis, angulis posticis subrectis; elytris leviter costatis, vix tuberculatis, costis alternis paullo magis elevatis, interstitiis obscure transversim rugulosis et seriatim sat fortiter punctulatis (hic illic pustulis nitidis vix elevatis plus minus distincte ornatis); tibiis anticis externe bidentatis; processu prosternali sat fortiter spiniformi. Long., 7—8 l.; lat., 4—4¾ l.

An extremely distinct species, notable for its elytra devoid of tubercles (the costæ being little more than crenulated even in the hinder part), its very strongly-lobed prothorax (a line joining the hind angles would pass very little behind the centre point of the segment), and the strongly-produced spiniform process of its prosternum.

S. Australia; near Port Augusta.

T. scaber, Linn. I have examples taken near Adelaide which I cannot separate from this European species; doubtless they are imported.

T. velutinus, sp. nov. Sat late ovalis; opacus; brunneo-niger, antennis testaceis, capite infra fulvo-hirsuto, corporis partibus elevatis (e.g., prothoracis et elytrorum tuberculis) rufescentibus; capite obscure ruguloso bituberculato antice vix angulato; prothorace quam longiori fere duplo latiori, postice lobato (lobo ante scutellum rotundato) postice quam antice minus quam dimidio latiori, haud punctulato, granulis ferrugineis adsperso (his latera versus confluentibus et costas fere tegentibus), supra in medio costas usitatas ferenti (costis intermediis integris), lateribus arcuatis vix sinuatis, angulis posticis obtusis; elytris seriatim punctulatis (puncturis sat magnis in fundo nitidis, in seriebus sat remote positis), interstitiis sat æqualiter tuberculis parvis elongatis opacis ornatis (his in seriebus sat crebre positis, in interstitiis 3°, 5° que ad basin costas formantibus); tibiis anticis in medio dente minuto extus armatis; processu prosternali perbrevi vix acuminato. Long., 5 l.; lat., 3½ l.

A very peculiar-looking species, presenting a dark-brown velvety aspect with all the raised parts appearing as rusty red spots in a

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certain light, and in a different light appearing almost of the colour of the derm. The front tibiæ too are peculiar, being scarcely dilated externally into a defined tooth even at the apex, and above the apex having only a very minute sharp tooth about the middle. The example before me has no trace of a removable indumentum.

N. Queensland; sent to me by C. French, Esq.

BUPRESTIDÆ.

CYRIA.

C. tridens, sp. nov. Elongata; postice angustata; supra glabra, subtus pilis pallidis vix aliter quam *C. imperialis* vestita; nigra, labro prothoracis vitta utrinque laterali antice posticeque abbreviata et elytris flavis, his nigro-notatis, pictura antice tridenti postice cultro simili; capite subfortiter acervatim punctulato, longitudinaliter inter oculos antice carinato postice sulcato; prothorace quam longiori (et postice quam antice) circiter dimidio latiori, foveis sat numerosis impresso, canaliculato, sparsim subtiliter (angulos anticos versus, nec ad latera, magis crebre) punctulato, lateribus a basi ad apicem sinuatim convergentibus, angulis posticis acutis sat productis; elytris apice singulatim subspinoso-acuminatis, lævibus, puncturarum seriebus intra substantiam positis per superficiem conspicuis; prosterno antice et ad latera sat fortiter rugulose punctulato retrorsum gradatim fere lævi; metasterno ad latera sparsim sat fortiter punctulato, in medio fere lævi, abdomine ad latera sparsim subtiliter punctulato in medio lævi. Long., 11½ l.; lat., 3½ l.

The pattern on the elytra at once distinguishes this species; it consists of a single common black mark, which (in the example before me) touches base, apex, or lateral margin only at the base of the suture. This black mark, in the hindmost third part of the elytra, is shaped like a ploughshare, from the middle of which (on the suture), rises a mark resembling a handle; on this handle, and occupying more than the front half of the elytra, rests the anterior portion of the black mark, which resembles a trident, with the three prongs directed forward, the lateral prongs nearly (and the middle one quite) reaching the base of the elytra.

Compared with *C. imperialis*, Don., apart from colour and pattern, this species is, throughout, much more finely punctured. The prothorax is not more closely or coarsely punctured on the sides than on the disc; besides the round fovea at the base of the median line, there are two sharply defined foveæ on either side, placed longitudinally, about half-way between the median

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line and the lateral margins, and two more on either side still nearer to the lateral margins; the elytra (except at the extreme base) are absolutely devoid of sculpture; the rows of what, on a casual glance, seem like punctures being on the underside, and only showing through. The elytra do not nearly meet at the sutural apex, but each elytron is separately narrowed behind into a subspiniform point.

NEOCURIS.

This genus seems to be very near *Anilara*, and both are near *Anthaxia*. They are both distinguished from the Australian genera allied to them by the total absence of longitudinal striæ on the elytra. M. Thomson says that *Anilara* appears to have only four segments in the hind body, but I think this must be a mistake; at any rate, I have not seen any species in which I cannot trace a fine suture between the first and second segments, making the number five; and I think I certainly know *A. Adelaidæ*, Hope. *N. Mastersi*, Macl., is described as having the elytra punctulate-striate, but I should say there is a doubt whether this is a true *Neocuris*. Probably all the Australian species attributed to *Anthaxia* are either *Neocuris* or *Anilara*. *Anilara* seems to be best distinguished from *Neocuris* by its short stout tarsi; its prothorax also is more strongly rounded laterally (as M. Thomson points out), but this character does not seem equally reliable in all the species. M. Thomson says that the apical ventral segment in *Anilara* is excavated; I do not find this to be quite an exact description of the structure, but its free margin has a distinct raised border running completely round it, which seems to be invariable, and undoubtedly gives it a certain appearance of being excavated; this border being absent in *Neocuris*.

Neocuris as at present constituted may be characterised by its small scutellum and moderately slender and elongate tarsi in combination with absolutely non-striate elytra and apical ventral segment devoid of spines, and of a continuous raised border. I think the species presenting these characters will need further subdivision eventually, as some of them have the elytra much shorter than the hind body (a character not mentioned by M. Thomson), but it will perhaps be well for the present not to treat this character as generic. The following are new species:—

N. dilataticollis, sp. nov. Convexiuscula; sparsim pubescens; supra ænea, capite viridi, elytris antice latera versus viridi-micantibus, utrinque postice vitta submarginali læte purpurea, corpore subtus femoribusque viridibus, antennis tibiis tarsisque obscuris; capite plano, crebre fortiter subrugulose punctulato; prothorace fortiter transverso, ut caput

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punctulato (latera versus paullo crassius), lateribus ab angulis anticis ad medium leviter divergentibus pone medium sat fortiter dilatato-rotundatis, margine antico fere recto, basi media lobata, angulis posticis acutis retrorsum directis; scutello haud transverso postice acuto; elytris obscure rugulosis, antice manifeste convexis, lateribus postice subtiliter denticulatis; prosterno fere ut pronotum sed paullo magis rugulose, abdomine sat æqualiter (ad latera paullo magis crebre) punctulatis; segmento ventrali apicali leviter late emarginato. Long., $2\frac{1}{5}$ l.; lat., 1 l.

The elytra of this insect are not shorter than the hind body. The most striking character lies in the shape of the prothorax, that segment increasing in width only gently from the front to about the middle, but thence nearly to the base being much more strongly and more abruptly dilated; the sides, however, owing to the strong curve of their hinder part are convergent close to the base.

Compared with *N. Fortnumi*, Hope, the principal differences (apart from colour and markings) are as follows:—The head is not concave, and its sculpture is not at all longitudinal; the prothorax is differently shaped, and is very much more closely and strongly punctured; the elytra are distinctly less coarsely sculptured.

N. S. Wales; near Sydney.

N. nigricans, sp. nov. Convexiuscula; sparsim pubescens; tota nigro-ænea; capite plano vel potius subconvexo, crebre fortiter subrugulose punctulato; prothorace fortiter transverso, confertim rugulose punctulato, lateribus ab angulis anticis fere ad basin leviter arcuatim divergentibus, margine antico fere recto, basi media lobata, angulis posticis acutis retrorsum directis; scutello parvo rotundato; elytris sat fortiter rugulosis, antice sat fortiter convexis, lateribus postice subtiliter denticulatis; prosterno fere ut pronotum punctulato; abdomine coriaceo et ad latera sat fortiter squamose punctulato; segmento ventrali apicali toto sat fortiter squamose punctulato, postice sat anguste angulatim nec profunde emarginato. Long., $2\frac{2}{5}$ l.; lat., 1 l.

This species is very like the preceding, and I have felt some doubt as to whether its differences might be merely sexual, but I do not think this can be the case. It is a shorter and wider insect, with the apical ventral segment differently shaped, and all the ventral segments differently sculptured. These characters are very likely to be sexual, but in addition the colour is widely different, the whole sculpture of the upper surface is more rugulose, the outline of the prothorax is different, and the front

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margin of the elytra is quite strongly produced, instead of being only gently convex.

N. S. Wales; Blue Mountains.

MELOBASIS.

M. Derbyensis, sp. nov. Supra viridi-aurea, subtus viridis vix auratus; nitida; fere glabra; capite plano confertim fortiter punctulato et pilis brevibus albidis dense vestito; prothorace quam longiori duplo (postice quam antice fere tertia parte) latiori, nullo modo canaliculato, sat fortiter minus crebre latera versus magis crebre (fere ut *M. vernæ*, Hope, sed paullo minus fortiter) punctulato, lateribus vix arcuatis, margine antico leviter emarginato vix bisinuato, basi bisinuata, angulis posticis sub acutis leviter retrorsum directis: elytris punctulato-striatis, latera versus striis obsoletis et puncturis confusis, interstitiis suturam versus subtilissime sparsissime punctulatis, lateribus postice denticulatis; prosterno antice declivi. Long., 5½ l.; lat., 2 l.

The prothorax scarcely differs from that of *M. verna*, Hope, in any respect except that the front margin is scarcely at all bisinuate, and that the puncturation is a trifle finer. The elytra are very much more distinctly striated than in that species, the nterstices of the striæ being almost lævigate. The puncturation of the underside is evidently finer than in *M. verna*. The following characters in combination will, I think, distinguish it from all its described congeners; colour of upper surface bright greenish-golden, head flat, pubescent and very closely punctured, prothorax without any trace of a dorsal line beyond a faint scratch at the base only discernible in certain lights, elytra quite devoid of costæ, but exceptionally distinctly striate.

N.W. Australia; King's Sound; in the collection of C. French, Esq.

STIGMODERA.

S. minuta, sp. nov. Sat angusta; capite viridi, prothorace aureo-cupreo viridique iridescenti, elytris cupreo-nigris singulis maculis 4 flavis ornatis, corpore subtus pedibusque cyaneis; capite planato crebre fortiter punctulato; prothorace quam longiori fere dimidio latiori, postice quam antice tertia parte latiori, fortiter convexo, perspicue canaliculato, crebre subtilius (quam caput minus fortiter) punctulato, lateribus leviter arcuatis, basi fortiter bisinuata in medio lobata, angulis posticis acutis; elytris sat fortiter striatis, basi antrorsum late sat fortiter arcuatim prominulis, apice oblique emarginatis et 2-spinosis, interstitiis convexis punctulatis alternis postice magis elevatis; corpore subtus fere glabro sat fortiter punctulato. Long., 3 l.; lat., 1 l.

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The spots on each elytron are a nearly circular one between the scutellum and shoulder, an oblong one placed longitudinally on the lateral margin a little behind the base, a fascia-like one about the middle, touching the lateral margin but not the suture and roundly dilated at its inner extremity, and an arched fascia-like one a little before the apex touching the lateral margin but not the suture.

Of the section of *Stigmodera* having the underside and also the prothorax unicolorous, the elytra of two colours and the apex of the elytra spined, the following very small species have been described:—*sexguttata*, Macl.; *bella*, Saund.; *hilaris*, Hope; *liliputana*, Thoms.; *parva*, Saund.; *triguttata*, Macl.; *læna*, Thoms. Of these only the first and last bear any marked resemblance to the present species. *S. sexguttata*, Macl., seems to differ considerably in the markings, and also in having the head broadly impressed and "very finely" punctured, while *læna*, Thoms., from W. Australia, differs *inter alia* by the hindmost yellow mark on its elytra being straight.

Queensland; sent to me by C. French, Esq.

S. septemmaculata, sp. nov. Minus lata; minus depressa; supra sat glabra, subtus sat dense albido-pubescens; obscure ænea, elytris testaceis, basi anguste æneis, maculis 7 nigro-purpureis ornatis (sc. communibus in sutura 3 utrinque marginem lateralem versus 2, posterioribus 2 in sutura conjunctis); capite prothoraceque confertim subfortiter (fere ut *S. amphichroœ*, Boisd.) punctulatis; illo longitudinaliter concavo; hoc subgibboso, canaliculato, quam longiori plus quam dimidio (postice quam antice vix dimidio) latiori, lateribus sat fortiter arcuatis, basi leviter bisinuata, angulis posticis acutis; elytris punctulato-striatis, basi late læviter arcuatis, apice oblique emarginatis et bispinosis (spinis nigris), interstitiis subtiliter sat crebre punctulatis; corpore subtus crebre subtilius (prosterno medio postice magis sparsim magis fortiter) punctulatis. Long., $4\frac{4}{5}$ l.; lat., $1\frac{3}{5}$ l.

The submarginal spots on the elytra are placed one a little behind the shoulder, the other scarcely behind the middle; the sutural spots are placed one about a quarter of its length from the base, one (of a diamond shape) slightly behind the middle and one near the apex, the hinder two being narrowly connected on the suture.

This is a very distinct species, a little like *S. 6-guttata*, Macl., but much larger, and very differently coloured, with the elytra very much more deeply emarginate at the apex, the apical spines (especially the external ones) very much larger, &c.

S. Australia; Lyndoch; in the S. A. Museum.

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S. Skusei, sp. nov. Tota læte cœrulea certo adspectu viridimicans, elytris antice ad latera et postice ante apicem transversim flavis exceptis; capite longitudinaliter concavo sat crebre sat fortiter punctulato; prothorace quam longiori (et postice quam antice) paullo plus quam dimidio latiori, basin versus in medio fortiter minus crebre punctulato (hinc antrorsum et latera versus gradatim magis crebre magis rugulose, antrorsum magis subtiliter punctulato; prothorace ut *S. 8-spilotæ*, Saund., sculpturato), lateribus fere a basi ad apicem arcuatim convergentibus, basi fortiter bisinuata, angulis posticis acutis; elytris punctulato-striatis, basi antrorsum late sat fortiter arcuatim prominulis, apice oblique emarginatis, intus breviter extus fortiter spinosis, lateribus pone humeros late minus fortiter dilatatis postice denticulatis, interstitiis sparsim minus subtiliter punctulatis, antice suturam versus subplanis, latera apicemque versus sat convexis; corpore subtus sat crebre sat fortiter punctulato, breviter sparsim albido-pubescenti. Long., $6\frac{1}{2}$ l.; lat., $2\frac{3}{5}$ l.

A very pretty and distinct species, entirely (except the yellow parts of the elytra) of a rich blue colour with greenish reflections in certain lights. The elytra are more easily described if the yellow be regarded as the ground colour. The blue then appearse as a very wide common sutural vitta (about as wide as each of th yellow lateral spaces) extending from the base to slightly beyond the middle of the length, where it merges in a straight fascia of the same colour (both margins of which, however, are sinuous), the front of which is a little behind the middle of the elytra; each elytron also bears a small blue spot occupying its inner apex.

N. S. Wales; taken in the Blue Mountains by Mr. Skuse.

S. hostilis, sp. nov. Nigro-ænea, elytris flavo-brunneis nigro-trifasciatis, externe rubro marginatis; fasciis in sutura conjunctis; prothorace quam elytra multo angustiori creberrime subtilius (basin mediam versus sparsius magis fortiter) punctulato; elytris punctulato-striatis, interstitiis crebre punctulatis antice suturam versus sat planis latera apicemque versus convexis, ad apicem singulatim trispinosis; corpore subtus dense sat longe piloso. Long., $5\frac{1}{2}$ l.; lat., $2\frac{1}{5}$ l.

The base of the elytra, which is narrowly black, is very distinctly wider than the base of the prothorax, and is distinctly and minutely dentiform at its humeral angles; it is widely arcuately and somewhat evenly arched forward. The front fascia is a little behind the base and is straight, its lateral apices a little produced forward, its middle with a small triangular projection nearly touching the scutellum; it does not reach the lateral

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margins. The second fascia is immediately behind the middle of the length, and touches the lateral margins; it is straight and nearly twice as wide as the front fascia, its lateral apices considerably dilated. The hindmost fascia is somewhat of a half-moon shape,—viewed with the head of the insect next the observer, it resembles an open umbrella,—and is near the apex. The prothorax, at its widest, is scarcely more than three-quarters the length of the widest part of the elytra; it is half again as wide as long, and nearly twice as wide across the base as across the front. Its puncturation is about as close as that on the prothorax of *S. amphicroa*, Boisd., but is a trifle finer (except in front of the scutellum where it is stronger and less close), and less rugulose. Its form is strongly convex in all directions, so that it appears decidedly gibbous. The head is moderately elongate and moderately concave longitudinally; its puncturation is much like that of the prothorax. The underside is closely and finely punctured.

This species seems to be near *Burchelli*, L. & G., but differs from it and its described allies by the the trispinose apex of each of its elytra; of the three apical spines the middle one is the largest and the least acute; the others are small and sharp.

W. Australia; near York; sent by C. French, Esq.

S. sternalis, sp. nov. Brevis; lata; depressa; fere glabra; cœrulea, capite prothoraceque supra æneis, antennis viridibus, elytris testaceis ad basin anguste obscuris, pone medium fascia angusta et in apice macula communi subquadrata nigris ornatis; capite longitudinaliter concavo, fortiter minus crebre (postice minus fortiter magis crebre) punctulato; prothorace quam longiori (et postice quam antice) duabus partibus latiori, sparsim subfortiter (latera versus paullo magis fortiter magis crebre) punctulato, lateribus a basi ad apicem arcuatim convergentibus, basi media late angulatim lobata, angulis posticis acutis; elytris striatis (striis sat fortiter punctulatis), basi antrorsum fortiter angulatim prominulis, apice emarginatis et bispinosis, lateribus pone humeros minus late sat fortiter dilatatis, interstitiis sparsim subfortiter punctulatis suturam versus in medio sat planis (basin apicem lateraque versus carinatis); corpore subtus subtiliter minus crebre punctulato; canali sternali elevato. Long., 5¼ l.; lat., 2¼ l. (vix).

Extremely like *S. Andersoni*, L. & G. It is a shorter and more depressed insect, with the elytra much more dilated behind the middle. The prothorax is much more strongly and sparsely punctulate, and is without any trace of a fovea in the hind angles; the scutellum is much less transverse; the punctures in

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the elytral striæ and also on the interstices are much stronger, the interstices are very much more convex; the underside is of a bright blue colour, and the pectoral excavation (receiving the prosternal process) is strongly elevated; the pubescence of the underside and legs is very thin and inconspicuous. The external angle of the base of the elytra is strongly defined and directed outward. The apical spot on the elytra is not connected on the suture with the transverse fascia.

S. Australia; in the collection of C. French, Esq.

S. Macleayi, sp. nov. Sat lata; subtus modice albido-pubescens; obscure viridis; elytris testaceis, basi anguste viridi, sutura late viridi (colore viridi pone scutellum dilatato, mox pone medium fasciam externe violaceam ad latera emittenti, paullo ante apicem in macula magna transversa dilatato, circa apicem recurvato), macula sat parva violacea pone humeros oblique posita; capite prothoraceque creberrime subtilius punctulatis; illo inter oculos longitudinaliter concavo; hoc quam longiori vix dimidio (postice quam antice fere duplo) latiori, lateribus a basi ad apicem rotundatim convergentibus, basi media angulatim lobata, angulis posticis acutis; elytris striatis (striis subtiliter punctulatis), basi antrorsum late trisinuatim minus fortiter prominulis, apice oblique emarginatis et bidentatis, dentibus externis majoribus, lateribus pone humeros modice dilatatis, interstitiis fere ut *S. sternalis* set multo magis crebre punctulatis; corpore subtus confertim punctulato. Long., 6 l.; lat., $2\frac{1}{5}$ l.

The colour of the markings on the elytra is peculiar, the base and extreme suture being green, all the other markings deep violet. The markings on the elytra are almost exactly (save that the post-humeral spot and the post-scutellar dilatation are smaller) as depicted in the figure of *S. audax*, Saund. (Ins. Saund., III., 1, t. 1, fig. 7), which, however, is a very different insect in other respects. The base of the elytra is of the same width as the base of the prothorax, their humeral angle is acute, but scarcely dentiform. The puncturation of the head and prothorax is as in *S. ocelligera*, L. & G. Perhaps near *S. Masteri*, Macl., which, however, is described as a smaller species of a brassy or bluish-black colour, the anterior spots on the elytra as adjoining the scutellum, the apices of the elytra strongly bispinose and not marked with dark colour, &c. The description of puncturation, &c., is not definite enough for comparison. Also near *cyanicollis*, Boisd., differing *inter alia* by its prothorax at the widest across the base and more closely punctulate.

Queensland; in the collection of C. French, Esq.

S. equina, sp. nov. Minus elongata; sat depressa; supra glabra,

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subtus sat dense argenteo-pubescens; brunneo-cuprea, elytris flavis, ad basin anguste cyaneis vittis fasciisque brunneo cupreis ornatis (sc. pone humeros utrinque vitta arcuata—his fascia transversa conjunctis—fascia mox pone medium posita, macula magna apicali et a fascia antemediana ad apicem sutura); capite medio longitudinaliter canaliculato, fortiter sat crebre punctulato; prothorace quam longiori (et postice quam antice) plus quam dimidio latiori, subfortiter minus crebre punctulato, lateribus rotundatis postice sinuatis, basi leviter bisinuata, angulis posticis acutis; scutello viridi concavo; elytris punctulato-striatis, basi subrectis, apice emarginatis (haud oblique) et bispinosis, lateribus pone humeros sat fortiter subangulatim dilatatis postice subtiliter denticulatis, interstitiis sparsim subfortiter punctulatis sat convexis; corpore subtus leviter crebre punctulato. Long., 4¼ l.; lat., 1⅓ l.

In the unique example before me there is a large round fovea on either side of the disc of the prothorax, which, however, may be accidental.

The markings on the elytra are much like those of *S. simulata*, L. & G. (as depicted in Tr. Ent. Soc., 1868, t. 3, fig. 5); the markings on the front half of the elytra differ only in the transverse fascia (connecting the lateral vittæ) having its front margin straight (*i.e.*, not produced forward on the suture); the post-median fascia differs in not being dilated near the lateral margin, and having both its front and hind edge evenly arched on either side (not flexuous); the apical spot is quite different, being somewhat like that of *S. thoracica*, Saund. (as depicted Jour. Linn. Soc., vol. IX., t. 9, fig. 11),—from a certain point of view the portion of it on each elytron bears a rough resemblance to a horse's head, the apical spines being regarded as the animal's ears. The apical emargination of each elytron is *quite* apical (not at all oblique), and the spines on either side of the emargination are well defined and equal. I incline to place this species near *simulata*, although it differs much in its much smaller size, more depressed form, prothorax wider at the middle than at the base and much less closely punctured, &c I am doubtful of the sex of my example.

S. Australia; near Port Lincoln.

S. quadrinotata, sp. nov. Sat elongata; sat depressa; postice latior; supra glabra subtus breviter minus dense pubescens; capite prothoraceque subaureo-viridibus, scutello viridi, elytris testaceis externe rufescentibus (sutura viridi, basi apice et fasciis 3 cyanescentibus), corpore subtus viridi, pedibus plus minusve violaceis, capite longitudinaliter concavo; protho-

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race quam longiori et postice quam antice dimidio latiori, lateribus ab angulis anticis fere ad basin rotundatim divergentibus, basi valde bisinuata, angulis posticis acutis; elytris punctulato-striatis, basi fortiter antrorsum rotundato-productis, apice oblique emarginatis et bispinosis, lateribus pone humeros modice dilatatis interstitiis sparsim punctulatis alternis convexis. Long., $4\frac{1}{6}$ l.; lat., $1\frac{3}{6}$ l.

Not unlike *S. quadrifasciata*, Saund., but much smaller and differently coloured; also the pattern on the elytra is different, the ante-median fascia being dilated (not contracted) on the suture, and reaching the lateral margins; it resembles the corresponding fascia in *S. carmineu*, Saund. (as depicted in Journ. Linn. Soc., vol. IX., tab. 10, fig. 32). The post-median fascia is very like that of *S. 4-fasciata* (as depicted loc. cit., fig. 39). The ante-apical fascia resembles the ante-median one reversed. All the fasciæ touch the external margins.

Victoria; in the collection of C. French, Esq.

N.B.—I have seen an example (from N. S. Wales) of this species in which the anterior two fasciæ of the elytra are both interrupted on either side on the disc, so that in place of those fasciæ there are two large marginal or submarginal spots on each elytron placed opposite (but not joining), corresponding dilatations of the suture. It is just possible that this variety may be *S. disjecta*, Kerremans, although it does not agree well with the description, especially in colour, the underside not being at all coppery, nor the apical part of the elytra red; but even if it should prove identical, the form I have called *S. 4-notata* is certainly deserving a name as a var.

S. dispar, sp. nov. Modice elongata; minus depressa; supra glabra, subtus sparsim breviter pubescens; læte viridis, elytris testaceis; capite prothoraceque confertim subtilius punctulatis; illo medio longitudinaliter canaliculato; hoc quam longiori (et postice quam antice) dimidio latiori, lateribus fortiter rotundatis, basi media fortiter lobata, angulis posticis minus acutis; elytris punctulato-striatis, basi valde subangulatim antrorsum productis, apice oblique minute emarginatis et bidenticulatis interstitiis sat crebre punctulatis (alternis antice, omnibus postice, sat convexis); corpore subtus crebre, prosterno medio sat sparsim, punctulato. Long., $3\frac{4}{6}$ l.; lat., $1\frac{2}{6}$ l.

The extremely brilliant green colour of every part, except the elytra—these being of a yellowish testaceous colour, without the slightest trace of any marking—will, I think, distinguish this from all the other *Stigmoderæ* of small size.

Queensland; in the collection of C. French, Esq.

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S. canaliculata, sp. nov. Sat elongata; minus depressa; supra fere glabra, subtus sparsim breviter pubescens; nigra, elytris rufis, sutura postice nigra (colore nigra ante apicem abbreviata et hic rotundatim dilatato; capite crebre sat fortiter punctulato, longitudinaliter profunde concavo; prothorace quam longiori (et postice quam antice) plus quam dimidio latiori, profunde canaliculato, in medio crebre subtilius punctulato et transversim rugato latera versus sat crasse ruguloso, lateribus ab angulis anticis longe ultra medium divergentibus ante basin sat fortiter rotundatis, basi bisinuata, angulis posticis acutis; elytris striatis (striis puncturis magnis sparsis parum distinctis instructis), basi fortiter rotundatim antrorsum productis, apice oblique emarginatis et bispinosis, lateribus postice subtiliter denticulatis, interstitiis confertim punctulatis alternis modice convexis; corpore subtus subtilius sat crebre punctulato, prosterno medio crebre sat crasse ruguloso. Long., 3 l.; lat., $1\frac{1}{10}$ l

Near *S. erythroptera*, Boisd., but *inter alia* very much smaller and narrower, with the prothorax less strongly punctured on the disc, the prosternum much more closely rugulose (this may not be the case in both sexes), the dark colour of the suture expanding into a rounded spot considerably before the apex, and not continued behind the spot. Also near *S. nanula*, Kerremans, which, however, has the apex of the elytra black and rounded.

Queensland; in the collection of C. French, Esq.

S. arborifera, sp. nov. Modice lata; minus convexa; supra fere glabra, subtus sat dense argenteo-pubescens; nigra, obscure hic illic purpureo-vel cyaneo-micans, elytris flavo-ornatis (sc. in elytris singulis vitta sat lata discoidali a medio fere ad basin attingenti, margine laterali angusto a basi ultra medium postice dilatato, et macula semilunulari apicali externe convexa); capite prothoraceque sat crebre sat fortiter (ut *S. Australasiæ*) punctulatis; illo in medio longitudinaliter sulcato; hoc quam longiori dimidio (postice quam antice paullo plus quam dimidio) latiori, lateribus sat arcuatis pone medium leviter sinuatis, basi leviter bisinuata, angulis posticis acutis; elytris sat fortiter punctulato-striatis, basi late vix arcutis, apice fortiter (vix oblique) emarginatis et bispinosis, lateribus postice subtilissime denticulatis, interstitiis sat convexis sat crebre punctulatis; corpore subtus crebre subtilius (in medio sparsim) punctulatis; prosterno medio sparsim minus fortiter punctulato. Long., $5\frac{1}{2}$ l.; lat., $2\frac{1}{10}$ l.

If yellow be regarded as the ground colour of the elytra, the

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black markings (the insect being looked at with its head next the observer) appear as three parallel wide vittæ, connected (along the base, and also a little behind the middle) at their extremities by transverse fasciæ; while the apical quarter of the elytra is occupied by a spot bearing a rough resemblance to the figure of a tree standing on the hinder transverse fascia, and not reaching the apex, except very narrowly along the suture. This species is not unlike *S. Wilsoni*, Saund., but besides considerable difference in pattern, the prothorax is considerably wider across the base than across the middle, &c.

Australia; I am doubtful of the exact habitat; in S. A. Museum.

S. marcida, sp. nov. Sat angusta; viridis, elytris (sutura in medio basique anguste viridibus exceptis) rufis; capite inter oculos leviter concavo, sat crebre minus fortiter (fere ut *S. viridicinctæ*, Waterh.), punctulato; prothorace quam longiori fere duplo (postice quam antice circiter dimidio) latiori, vix manifeste canaliculato, pernitido, inæqualiter sat fortiter sat crebre (fere ut *S. flavomarginatæ*, G. & H., sed latera versus magis crebre magis rugulose) punctulato, lateribus modice sat æqualiter arcuatis, basi bisinuata (in medio vix distincte lobata), angulis anticis minus distinctis posticis sat acutis; elytris sat fortiter striatis (interstitiis transversim subtiliter rugatis sparsim subfortiter punctulatis) ad apicem leviter emarginato-truncatis, angulis suturalibus sat acutis vix prominulis, basi leviter æqualiter arcuata; corpore subtus pilis pallidis sat dense vestito, sat crebre sat fortiter punctulato.

Maris segmento ventrali apicali apice profunde arcuatim emarginato. Long., 12 l.; lat., $4\frac{2}{5}$ l.

The width of the prothorax is to its length down the middle as 19 to 11. The species in general appearance is suggestive of *S. flavomarginata*, G. & H., but differs from that species (apart from colour) *inter alia* by its narrower form, and especially by its longer head with the clypeus emarginate in front, and its prothorax evenly arched at the sides, whereas in *flavomarginata* the prothorax is at its widest a little in front of the base and thence narrows forward with sides but little curved.

The middle part of the prosternum is punctured rather strongly and closely, scarcely less so than the middle part of the ventral segments; this, however, is very likely not the case with the female. In my example of *flavomarginata*, which seems also to be a male, the apical ventral segment is only slightly emarginate (almost truncate) behind, and the middle part of the prosternum is very finely and sparsely punctulate.

W. Australia; in the collection of C. French, Esq.

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S. Andersoni, L. & G., var. *terminalis*, Kerremans. This must be very close to, if not identical with, *S. brutella*, Thoms. I believe it to be a good species.

S. Melbournensis, Thoms. This species must be very close to, if not identical with, *S. Australasiæ*, L. & G.

S. Carpentariæ, sp. nov. Sat lata; minus convexa; postice sat angustata; fere glabra; prothorace rufo antice posticeque et in disco viridi-tincto; scutello viridi; elytris rufo-testaceis rubro-cinctis, margine antica angusta macula oblonga transversa pone medium posita sutura postice et apice viridibus; corpore subtus rufo-testaceo, prosterno medio cum maculis nonnullis in meso et meta-sternis et in abdomine segmentum ventralium marginibus transversis et pedibus (his nihilo minus rufo-maculatis) viridibus; capite fere plano crebre sat fortiter punctulato; prothorace quam longiori duabus partibus (postice quam antice fere duplo) latiori, subfortiter minus crebre sat æqualiter punctulato, lateribus postice fere parallelis antice ad angulos anticos sinuatim fortiter convergentibus, basi media late lobata; elytris punctulato-striatis, ad basin externam subquadratim productis (fere ut *S. viridicinctæ*, Waterh.), ad apicem fortiter emarginatis (spinis externis parvis, suturalibus magnis), interstitiis crebre punctulatis antice transversim rugulosis. Long., 13 l.; lat., $5\frac{1}{6}$ l.

A very distinct species somewhat resembling *S. vitticollis*, Macl., in general style of marking on the upper surface.

N. Queensland; Gulf of Carpentaria; in the collection of C. French, Esq.

S. ornata, sp. nov. Minus lata; minus convexa; fere glabra, subtus sparsim albido-pubescens; capite prothorace scutelloque læte cupreo-viridi-cyaneoque versicoloribus, corpore subtus splendide aureo, pedibus viridi purpureoque micantibus, elytris testaceis, his macula magna communi basali (prothoraci magnitudine formaque simili) fascia mediana lata et macula communi elongata apicali nigris ornatis; capite prothoraceque confertim sat fortiter punctulatis; illo longitudinaliter concavo; hoc quam longiori (et postice quam antice) plus quam dimidio latiori, lateribus leviter arcuatis, basi leviter bisinuata; elytris punctulato-striatis, ad basin subrectis, ad apicem rotundatis, interstitiis convexis sparsim punctulatis; corpore subtus crebre nec fortiter punctulato.

Maris segmento ventrali apicali postice late sinuato-truncato, prosterno medio fortiter sat crebre punctulato. Long., $6\frac{1}{3}$ l.; lat., $2\frac{1}{2}$ l.

This is a very beautiful and very distinct species. The mark

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ings on the elytra bear considerable general resemblance to those of *S. grata*, Saund. These markings are all connected on the suture; the basal one is a spot nearly as large as the area of the prothorax, and not unlike it in shape, touching the base along about three-quarters of its width, but not touching the lateral margins; the space between the basal spot and the median fascia is narrowly black on the suture, and is very short; the median fascia touches the lateral margins very narrowly, its front edge is somewhat triangular, its hind edge sinuous; the median fascia is joined on the suture by a wide stem to the apical spot, which is somewhat elongate-quadrate, and very similar in form and size to the apical spot of *S. thoracica*, Saund. (depicted Journ. Linn. Soc., vol. IX., tab. 9, fig. 11).

Victoria; in the collection of C. French, Esq.

S. longula, sp. nov. Sat elongata; subdepressa; subglabra; cœrulea, prothoracis lateribus elytrorum fasciis 2 latis suturam haud attingentibus altera mox ante medium externe antrorsum producta, altera subapicali externe retrorsum producta) prosterni lateribus abdominis lateribus (macula utrinque in segmentis 2-4 positis exceptis) macula in segmento ventrali penultimo medio posita et segmento ventrali apicali testaceo-rufis; capite longitudinaliter profunde sulcato, crebre minus fortiter punctulato; prothorace quam longiori plus quam dimidio (postice quam antice fere duplo) latiori, sparsim vix fortiter punctulato, lateribus incrassatis fortiter rotundatis, basi leviter bisinuata; elytris punctulato-striatis, ad basin late nec fortiter arcuatis ad apicem emarginatis et bispinosis, spinis externis valde elongatis, interstitiis sparsius punctulatis subplanis latera apicemque versus magis convexis.

Mas latet.

Feminæ prosternomedio sparsim parum fortiter punctulato. Long., 9 l.; lat., $3\frac{3}{5}$ l.

The shape of the prothorax is very unusual in the genus, the sides being strongly rounded, so that the base is much narrower than the widest part, and the widest part being exceptionally far from the base—indeed, a line drawn across the prothorax at its widest would intersect the median longitudinal line in front of its middle; the sides of the prothorax are incrassated, and limited by a sulcus, as in *S. variabilis*, Don. The red lateral margins of the prothorax are so wide as together to equal the dark intermediate space.

I hardly know to what species to compare this; its elytra spinose at the apex in combination with red-margined prothorax, underside variegated with red, and elytra fasciated, place it in a

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section of the genus (as I have roughly and artificially tabulated it) to which *cyanipes*, Saund., and numerous other species belong; *cyanipes* is very variable in markings, and one of its varieties (not that figured by Mr. Saunders) scarcely differs from the present insect in markings, except in the hinder red mark being less produced hindward on the margin, so that the hinder dark mark has a nearly straight edge in front reaching from margin to margin; whereas in *S. longula* this dark mark appears as a subquadrate spot, placed and shaped much as in *S. cruenta*, L. & G. (as figured by Saunders, Tr. Ent. Soc., 1868, t. 2, fig. 21). But this insect is very unlike *S. cyanipes* in other respects, and recalls to mind, I think, very differently-coloured species (*e.g.*, *S. cruenta*) by its shape, while it stands almost, if not quite, alone in its prothorax being at the widest (to the eye considerably, and by measurement a little) in front of the middle of the median line, while at the same time the prothorax is much wider at this point than at the base; the prothorax of *S. sanguinea*, Saund., approaches somewhat to this form, but besides having its sides less converging hindward, it has not the thickened lateral margins separated from the disc by a sulcus.

Victoria; in the collection of C. French, Esq.

EUCNEMIDÆ.

DYSCOLOCERUS.

I have some hesitation in referring the following species to this genus. M. de Bonvouloir, in his monograph of the *Eucnemides*, attaches great importance to the relative length of the joints of the antennæ, and notes *Dyscolocerus* as very remarkable on account of joints 4-8 of the antennæ being very short and transverse, hardly longer together than the ninth. In the present insect joints 4-8 are strongly transverse (joint 4 a little longer and less transverse than the following) and are together distinctly shorter than joint 9; joint 10 is distinctly, though not much, shorter than 9, and 11 is the longest joint of the antennæ, being nearly half again as long as 10. In *Dyscolocerus* the apical joint is much smaller than the tenth. I think it not unlikely that M. de Bonvouloir would consider this sufficient difference to call for a new generic name, but as the general characters seem in other respects to agree with *Dyscolocerus*, and the *species* seems considerably to resemble the unique species ascribed to *Dyscolocerus*, there seems no great objection to place it provisionally in that genus. It agrees with *Dyscolocerus* in the form of its posterior coxæ (prolonged over the base of the femora and beginning to narrow outward much nearer to their inner than their external extremity), the absence of tarsal sulci on the

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abdomen of prosternal sulci and of tarsal lamellæ, the prothorax not having more than one marginal carina, the mandibles of ordinary structure, the clypeus simply rounded in front, the prosternal sutures straight, and the epistoma much narrowed at its base, and much bent under the head.

D. heros, sp. nov. Oblongo-elongatus; modice convexus; postice leviter attenuatus; aterrimus, elytris et prothoracis angulis posticis rubris; capite prothoraceque crebre rugulose nec crasse punctulatis; illo in medio longitudinaliter leviter impresso; hoc fortiter transverso, canaliculato, antice manifeste angustato, ante basin utrinque oblique impresso; elytris pube densa nitida læte rubra vestitis, striatis, sat dense vix rugulose punctulatis, interstitiis leviter convexis. Long., 6 l.; lat., $2\frac{1}{5}$ l.

This is by far the finest Australian *Eucnemid* I have seen. N. S. W.; Blue Mountains.

CURCULIONIDÆ.

DYSCHŒNIUM.

Attention is called in the Zool. Record., 1890, to my having omitted to state categorically to what group of *Curculionidæ* this genus should be referred. Its place is among the *Erirhinides*, as the Recorder rightly conjectures from its place in my memoir, where it stands between two *Erirhinid* genera.

LONGICORNES.

TRYPHOCHARIA.

T. Mitchelli, Hope. The insect which I suppose must be this species, and which I have seen, I believe, from several localities in N. S. Wales and Queensland, does not agree very well with the figure [Tr. Zool. Soc., III. (2), t. 12, fig. 8] in respect of markings. It is very much like *T. Mastersi*, Pasc., but differs in having a small sharp spine (not a blunt tubercle) on either side of the prothorax, in the more coarsely rugulose puncturation of almost every part, and in the less elongation of the third joint of the antennæ as compared with the fourth; the infuscation of the apical part of the elytra moreover is much less extended forward (though it is likely that this is an unreliable character).

It is also a good deal like *T. Odewahni*, Pasc., differing from it *inter alia* by the bispinose apex of its elytra.

BETHELIUM.

B. tricolor, sp. nov. Setis erectis sparsim vestitum; ferrugineum, prothorace antice posticeque paullo infuscato, elytrorum

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parte dimidia apicali lateribusque piceis vel nigris, disco utrinque flavo-bifasciato, (fascia antica angusta a margine retrorsum arcuata, postica lata a margine oblique antrorsum directa) fasciis suturam haud attingentibus; capite crebre punctulato, antice fortiter declivi; antennis maris elytrorum apicem vix superantibus (feminæ manifeste brevioribus), articulo 3° quam 1^us^ vix quam 4^us^ multo quam 5^us^ manifeste longiori, 6°-11° (10°, 11° que paullo brevioribus exceptis) 5° subæqualibus; prothorace vix transverso, crebre æqualiter granulato vel rugulose umbilicato-punctulato, lateribus sat fortiter sat æqualiter rotundatis postice vix sinuatis; elytris apice subrotundatis vix sinuato-truncatis, antice sat fortiter sat rugulose (retrorsum gradatim minus fortiter) punctulatis, abdomine infuscato; oculis grosse granulatis. Long., $3\frac{1}{5}$—$4\frac{1}{2}$ l.; lat., $1\frac{1}{10}$—$1\frac{3}{10}$ l.

Although this is by no means a rare insect, it appears to have escaped description hitherto. It is of somewhat broader and more robust form than *B. signiferum*, Newm. In the male the prothorax is by measurement just barely longer than wide, the length and breadth being equal in the female. The dark portions of the elytra are so ordered that the ferruginous part is simply a common patch on the anterior half of the suture occupying the whole base, contracting hindward and then expanding again.

S. Australia; Port Lincoln; also near Adelaide.

B. mundum, sp. nov. Setis erectis sparsim vestitum; rufum, prothorace antice posticeque paullo infuscato, elytris piceis circa scutellum vix rufescentibus fasciis binis angustis subeburneis tortis albidis ornatis, femoribus (basi excepta) abdomineque piceis; cetera fere ut *B. tricoloris* sed prothorace paullo minus fortiter sculpturato. Long., 3 l.; lat., $\frac{4}{5}$ l.

I can hardly specify any difference between this and the preceding species except in the diminutive size of this, and the very different markings of its elytra, which consist of two slightly-raised transverse zigzag lines, one a little in front of the middle, almost hair-like in its narrowness, and scarcely reaching the suture; the other a little behind the middle, somewhat wider, less zigzag, and distinctly reaching the suture. This insect must be very like *Ectosticta eburatum*, Pasc., but its coarsely-granulated eyes place it far from *Ectosticta*, and moreover its prothorax could not possibly be described as having "coarse crowded punctures," the sculpture of its prothorax presenting the appearance rather of small almost-effaced granules.

N. S. Wales; Mulwala; sent to me by Mr. Sloane.

SISYRIUM.

The discrimination of generic characters in the numerous

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species closely related to *Sisyrium* seems to be most difficult. M Lacordaire says that complete identity exists between that genus and *Acyrusa*, except in the latter having a spine at the apex of the third joint of the antennæ, and a pubescent fovea on either side of the basal four ventral segments. I have not seen any species presenting these characters, but I have before me an insect from western S. Australia, and another from near Adelaide, having a pubescent fovea on either side of the third and fourth ventral segments, but no spine on the antennæ. I have also a species from western S. Australia having the antennal spine, but no ventral foveæ; and a fourth species from the same locality devoid of both characters, neither of which appears to be sexual. The last-mentioned of the above species is possibly, but not probably, a variety of *S. stigmosum*, Pasc.; in any case its differences from *stigmosum* are so strongly marked that a distinctive name seems desirable; the others appear to be new.

As it seems absurd to go on making a new genus for every new species among insects that might at a casual glance almost pass for being mere varieties of a single species, it seems to me desirable to call them all *Sisyrium*, as none of them possess both the characters on which *Acyrusa* has been distinguished. The last of the following species has the maxillary palpi much longer than the labial (a divergence which M. Lacordaire allows within the limits of the allied genus *Callidiopsis*), and also has the anterior coxæ more prominent than is usual in the subfamily; a little more prominent even than in *Diatomocephala*.

S. stigmosum, Pasc., var.? *vittatum*.

A *S. stigmoso* differt colore. Rubro-ferrugineo, elytris nigro-notatis, macula antica in vittam nigro-piceam (a basi ad fasciam antiapicalem integram) elongata; prothorace quam latiori circiter quarta parte longiori; pedibus unicoloribus. Long., 4⅛ l.; lat., 1 l.

Apart from the characters mentioned above, the description of *S.* (*Igenia*) *stigmosum* applies very well to the present insect. It will be noticed that the colouring and the pattern on the elytra are considerably different, and that the prothorax is very much less elongate than that of *S. stigmosum* is said to be. Unless, however, Mr. Pascoe *measured* the proportions, his statements on the point are probably worthless, as the proportions of a prothorax are in few instances by measurement the same they appear to a casual glance.

S. Australia; near Port Lincoln.

S. fraternum, sp. nov. Setis erectis sat sparsim vestitum; ferrugineum, elytris macula communi (literam U simulanti) nigro-fusca ornatis; capite fortiter minus crebre punctulato

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inter oculos subapproximatos longitudinaliter ruguloso, antennis (? maris) elytrorum apicem parum superantibus, articulo 3° (hoc ad apicem spina elongata armato) quam basalis breviori quam 4^{us} vix longiori, 5°-11° inter se sat æqualibus quam basalis fere longioribus; prothorace quam latiori parum longiori, ad latera nodoso, supra inæquali fortiter minus crebre punctulato, spatiis lævigatis subconvexis circiter 5 ornato, pone apicem constricto; elytris apice rotundatis seriatim sat regulariter (nisi parte apicali confuse leviter punctulata) puncturis sat magnis subquadratis instructis, his (et seriebus et in seriebus puncturis) sat crebre positis. Long., 4—4½ l.; lat., 1⅛ l. (vix).

Extremely like the preceding, but a slightly stouter form, and distinguishable (apart from the antennal spine) by the very different proportions *inter se* of the antennal joints, and the different pattern on the elytra, which consists of a common mark resembling the letter U, extending almost from the base to the apex; whereas in the preceding the pattern consists of a wide subapical fascia, from the front of which on each elytron (a little nearer to the suture than to the lateral margin) a narrow vitta runs forward nearly to the base of the elytra. The eyes are evidently more approximated above than in any of the allied forms in my collection, and the antennæ are slightly stouter. I cannot but acknowledge the *possibility* that this may be the male of the preceding insect, but if so the sexual differences are certainly very unusual in including a considerable elongation of the third joint of the antennæ in the female. Moreover, as I have two examples of *S. fraternum*, and the pattern on their elytra is absolutely identical, and markedly different from that of the "var. ? *vittatum*," the differences look still less likely to be sexual

S. Australia; west of Port Lincoln.

S. ventrale, sp. nov. Setis erectis sat sparsim vestitum; pallide testaceum, antennis prothorace et corpore subtus (abdomine infuscato excepto) rufescentibus, capite obscuro, elytris fascia lata subapicali (et antice utrinque macula vel vitta discoidali) fusca vel nigra ornatis; capite ut *S. fraterni* sed oculis minus approximatis; antennis elytrorum apicem vix superantibus, articulo 3° quam basalis vix quam 4^{us} multo longiori, ceteris (2° brevi excepto) 3° et inter se subæqualibus; prothorace quam latiori vix longiori, ad latera nodoso, supra inæquali, sparsim crassissime punctulato, spatiis lævigatis circiter 5 ornato, pone apicem constricto; elytris apice rotundatis ut *S. fraterni* sculpturatis; segmentis ventralibus 3°, 4° que utrinque fovea aureo-pilosa ornatis. Long., 3½ l.; lat., ⅝ l.

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The hind body with tomentose foveæ on the sides of the third and fourth segments (only) will at once distinguish this species. I have seen about half a dozen examples, among which I do not observe differences likely to be sexual except that the antennæ of some are slightly, and of others not, longer than the body. The mark on the anterior part of the disc of each elytron varies from a small almost square black spot to a vitta of variable length, and is liable to be almost obsolete. It differs from *S. fraternum, inter alia*, by the extremely coarse sparse punctuation of its prothorax.

S. Australia; Port Lincoln district; under bark of Eucalyptus.

S. sparsum, sp. nov. Setis erectis sat sparsim vestitum; colore ut *S. ventralis*, sed prothorace (exempli typici) piceo; capite antennisque ut *S. ventralis;* prothorace quam latiori circiter tertia parte longiori, ad latera nodoso, ut *S. ventralis* sculpturato; elytris a *S. ventralis* differt punctorarum seriebus minus crebris et punctoris in seriebus minus crebre positis postice minus obsoletis; segmentis ventralibus ut *S. ventralis* (exempli typici tomento abraso). Long., 3 l.; lat., $\frac{3}{8}$ l. (vix).

Very distinct by its diminutive size and the comparatively sparse puncturation of its elytra, as well as by its comparatively longer prothorax, which is decidedly (and looks much) longer than wide. In the typical example the anterior spot on the elytra is large, square, and black, but probably it is variable.

S. Australia; near Adelaide.

S. lævigatum, sp. nov. Ferrugineum, elytris intra marginem lateralem antice vitta fusca ornatis, mesosterno metasternoque paullo infuscatis; subopacum; supra fere lævigatum; capite quam prothorax fere latiori, linea longitudinali impresso; prothorace leviter transverso, lateribus subangulatim rotundatis; elytris pustulis minutis setiferis 4-seriatim impressis; antennarum articulo 3° quam 1^us^ et quam 4^us^ paullo breviori. Long., $5\frac{1}{2}$ l.; lat., $1\frac{1}{6}$ l.

Perhaps somewhat like *S. (Obrium) ibidionides*, Pasc., although such a conjecture is necessarily not much more than a guess, for the author of that species does not vouchsafe any information upon a point so important even as its puncturation.

W. Australia; Champion Bay; in the collection of C. French, Esq.

The following is a tabulation of the described species attributable to *Sisyrium* (regarding the characters of the genus among the *Callidiopsidæ* as follows:—femora moderately clavate, prothorax not furnished with well-defined callosities, such as those on the prothorax of *Callidiopsis*, head not abruptly declivous in front, elytra with well-defined colours and pattern, antennæ as

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long as the body or nearly so, basal and second ventral segments not furnished with tomentose foveæ). I have been obliged to depend on Mr. Pascoe's descriptions for the characters of some of his species.

A. Elongate species of small size (long., 3-5 l.)
  B. Antennæ devoid of spines.
    C. Ventral segments devoid of tomentose foveæ
      D. Sides of elytra of pale colour in their anterior half.
        E. Prothorax nearly half as long as elytra ... ... ibidionides, Pasc.
        EE. Prothorax much shorter... stigmosum, Pasc.
      DD. Sides of elytra dark, except at base ... ... dorsale, Pasc.
      DDD. Elytra with a dark lateral stripe reaching the base, but not the apex ... lævigatum, Blackb.
    CC. Third and fourth ventral segments with tomentose foveæ
      D. Punctures in rows on elytra close and regular except near apex... ... ... ventrale, Blackb.
      DD. Punctures in rows on elytra much less close ... ... sparsum, Blackb.
  BB. Antennæ with a spine at the apex of the third joint... ... ... fraternum, Blackb.
AA. Robust species of larger size (long., 6 l.) tripartitum, Pasc.

APOSITES.

A. lanaticollis, sp. nov. Rufo-piceus, elytris lividis, elytris pedibusque pilis fulvis (his basin versus albidis) dense vestitis, antennis pube minuta fulva confertim instructis, ceteris partibus pilis albidis vestitis (his in prothorace conspicue condensatis); prothorace rugulose sat crebre punctulato in medio longitudinaliter et lateraliter spatio nitido sublævi instructo, quam latiori fere longiori, subquadrato, antice quam postice manifeste angustiori, lateribus obscure bisinuatis, basi fere truncato, angulis posticis extrorsum sat prominulis; elytris externe fortiter emarginatis, apice angustatis, sat crebre sat squamose punctulatis (basin versus minus crebre minus squamose), singulis leviter 4-costatis, costis apicem fere attingentibus (1ª haud suturæ conjuncta); segmentis ventralibus maculis parvis denudatis ornatis; antennis quam corpus longioribus, articulis 3-11 compressis. Long., 9-10 l.; lat., 2 l.

Much smaller than *A. macilentus*, Pasc., with the prothorax clothed with white woolly pilosity all but entirely concealing the

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derm, which, on the removal of the pilosity is seen to be very distinctly punctured, and to have two nitid lævigate stripes placed in the form of a cross. The elytra are gradually narrowed to almost a *point* at the apex, and are very strongly incurved laterally; on each of them are four feeble costæ (besides the lateral margin and suture) of which that nearest to the suture is somewhat widely separated from the latter at the base, but gradually approaches it hindward to about the middle of the elytra, whence to the apex (or nearly so) it runs parallel to the suture.

S. Australia; basin of Lake Eyre.

A. niger, sp. nov. Niger; supra pube subtili fulva vix conspicua, subtus et anguste in elytrorum marginibus pilis griseis sat dense positis vestitus; prothorace transversim crassissime rugato, quam latiori fere longiori, antice quam postice sat angustiori, lateribus a margine antico retrorsum divergentibus (in medio subangulatis, hinc retrorsum convergentibus, juxta basin retrorsum divergentibus), angulis posticis extrorsum sat prominulis; elytris externe leviter emarginatis, apice angustatis, fere ut præcedentis sculpturatis sed costa 1ª paullo pone basin suturæ conjuncta; antennis fere ut præcedentis sed nigræ. Long., 8½—9 l.; lat., 1⅘ l.

A very distinct species.

W. Australia; near Eucla.

LYGESIS.

It is impossible, I think, in many instances to feel any confidence in determinations arrived at from a study of Mr. Pascoe's work on the *Longicorns*. This genus furnishes a case in point. Mr. Pascoe originally confused it with *Didymocantha*, whose species, as M. Lacordaire remarks, are "very different insects," but subsequently formed a new genus for it and others under the name *Isalium*. Later still Mr. Pascoe discovered that some members at least of his *Isalium* were attributable to a genus long before characterised by the Rev. F. W. Hope under the name *Strongylurus;* so *Isalium* was dropped; and then finally, on further reconsideration still, the author arrived at the conclusion that one of the species originally published as a *Didymocantha* was neither a *Didymocantha* nor a *Strongylurus;* and so another new name (*Lygesis*) was proposed, with a very brief diagnosis, merely mentioning a few characters in which *Lygesis* differs from yet another new allied genus characterised at the same time. If one turns to the description of the typical *species* of *Lygesis* for more information, one finds a description of extreme brevity, in which there is actually no mention whatever of the *puncturation* of the insect.

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I have before me an undescribed insect near *Strongylurus* which seems not unlikely to be a *Lygesis;* at the same time I cannot consider the determination at all reliable. I have also a species which is probably *Lygesis mendica*, Pasc. If the latter is right, my examples of it are females; and if so, the insect I am about to describe is probably the male of a *Lygesis* (Mr. Pascoe does not say whether he founded the genus on the male or female). If this species is not a *Lygesis*, it represents a new genus very near to it. The principal differences that I observe consist in the almost contiguous eyes, the much greater length of the antennæ (which are not much less than half again as long as the body), and the very elongate head, which is produced in front of the antennæ to a length slightly exceeding the length of the head behind the antennæ; the intermediate coxæ and adjacent parts are as in *Strongylurus*. The antennæ, moreover, are distinctly compressed, and not much different from those of a female *Opsidota;* but in *Opsidota* the head is not produced anteriorly at all.

L. (?) *ornata*, sp. nov. Sat parallela; setis subtilibus erectis sparsius vestita; nigro-fusca, elytris fere albidis antice et in medio fusco-notatis apicem versus rufo-ferrugineis, antennis pedibusque ferrugineis; capite antice fortiter producto, oculis grosse granulatis permagnis et supra et subtus fere contiguis; prothorace (hoc quam caput parum latiori) quam trans basin latiori fere longiori, subcylindrico, antrorsum nonnihil angustato, crassissime ruguloso, lateribus vix sinuatis; scutello testaceo-pubescenti; elytris (his quam prothorax sat latioribus) apice singulatim rotundatis, antice ut prothorax (retrorsum gradatim minus crebre minus fortiter) sculpturatis. Long., 6½ l.; lat., 1½ l.

The anterior fuscous-black mark on the elytra occupies the whole of the front quarter (and is continued hindward a little on the suture), except a large spot in the middle of the dark space so formed, which is of the prevailing yellowish-white colour; the hinder mark is extremely like the corresponding mark in *Strongylurus scutellatus*, Hope; the apical reddish-ferruginous space is sharply distinguished from the rest of the surface; its front margin is projected forward about at its middle. The narrow strip of the whitish ground colour which lies between the hinder blackish fascia-like mark and the reddish apical patch appears from a certain point of view (*i.e.*, looking across the suture) like the figure "3," owing to the irregularities of outline before and behind it.

Queensland; in the collection of C. French, Esq.

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OPSIDOTA.

It is not entirely without hesitation that I refer this species to *Opsidota*, but I think the structural characters are sufficiently close to justify my doing so—at any rate provisionally. The style of marking is very suggestive of *Phoracantha*, the upper surface is nearly devoid of pubescence, the antennal joints while very distinctly compressed are less so than in *O. infecta*, Pasc., and the basal ventral segment is a little longer than in that insect. The following characters, however, bring it very near to *Opsidota*; eyes coarsely granulated, intermediate coxal cavities closed externally, anterior coxal cavities open behind, head short, antennæ (in the male) much longer than the body, their joints not spinose rather strongly compressed (but only slightly more produced at their inner than their outer apex), elytra rounded at the apex but having the sutural angle produced in a short spine, legs moderately elongate, the femora not clavate, antennæ not ciliated beneath but with a few long hairs at the apex of the joints, their third and fourth joints about equal in length.

O. guttata, sp. nov. Nigra, elytris singulis maculis 3 flavis ornatis; macula antica transversim subreniformi paullo pone basin posita, macula submediana transversa, macula subapicali parva fere circulari; prothorace crassissime ruguloso, ad latera inæquali nec spinoso, pone medium spatio lævi ornato; elytris antice crassissime rugulose, postice multo subtilius nec rugulose, punctulatis, apice rotundatis, sutura ad apicem spinosa; antennis quam corpus multo longioribus, articulis sat compressis, 3° 4° longitudine æquali; unguiculis divaricatis. Long., 8—10 l.; lat., $2\frac{1}{8}$—3 l.

S. Australia (interior); also W. Australia (near Eucla).

BEBIUS.

B. variegatus sp. nov. Elongatus; cylindricus; pilis elongatis erectis sparsim vestitus; ferrugineus, femoribus anticis abdomineque obscuris, elytris fascia mediana angulata flava (hac antice posticeque nigro-marginata, spatio nigro postico maculam parvam flavam ferenti) ornatis; capite prothoraceque crebre fortiter rugulosis, in hoc rugulis transversim positis; elytris antice fortiter rugulose, postice paullo minus fortiter minus rugulose, punctulatis, ad apicem emarginatis. Long., $5\frac{1}{2}$ l.; lat., 1 l.

Very distinct from *B. filiformis*, Pasc., by the markings on its elytra and the emarginate apex of the same; also by its prothorax scarcely so elongate, not in the least narrowed in front, and with the rugulosity of its surface having a distincly transverse arrangement.

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Victoria; taken by C. French, Esq., from a wattle near Lillydale.

MAULIA (gen. nov.).

Caput sat breve, genis antice dentiformibus, fronte lata minus concava; oculi sat tenuiter granulati, lobo superiori sat parvo; tuberculi antennarii subobsoleti; antennæ robustæ, sat breves; prothorax supra sat inæqualis, ad latera tuberculatus; elytra sat parallela abdomen tegentia; pedes minus elongati, femoribus leviter clavatis, tarsis sat latis; coxæ anticæ globosæ minus approximatæ, postice apertæ; coxæ intermediæ ad latera clausæ; segmentum ventrale basale quam cetera modice longius; unguiculi divaricati.

The intermediate trochantins are very conspicuous, transversly placed, and transversely intersected by a strong sulcus.

I am at a loss to suggest any group of Longicornes in which this genus can be placed satisfactorily.

The structure of the intermediate coxæ and parts adjacent thereto is decidedly suggestive of *Phalota*, but the facies and many characters are quite inconsistent with such an alliance. The general appearance is much like that of *Pempsamacra dispersa*, Newm., in miniature, with which there is agreement in many characters including the tooth-like prominence of the apex of the cheeks, but in *Pempsamacra* the intermediate coxæ are widely open laterally. *Nenenia*, Pasc., is a genus which its author has been unable to place in any named "tribe," though considering it nearest to *Phalota*, and these particulars seem to suggest a probable relationship to the present insect; I think I know *Nenenia*, and in that case there does not seem to be much real affinity, but even if I am wrong in my identification the "fronte excavato" and "abdominis segmenta longitudine æqualia," of that species are quite conclusive as to its generic distinctness from that which I have characterised above. On the whole I think this genus cannot stand far away from *Pempsamacra*.

Compared with *Pempsamacra dispersa* (and apart from size) the head of this insect is less produced in front, but is very similar in respect of its slight concavity and width between the antennæ, and in the structure of its antenuæ (except in the apical six joints being less abbreviated); its prothorax is considerably shorter, with much stronger and sharper lateral tubercles; and its elytra are scarcely so much narrowed hindward.

I believe I am right in considering that the intermediate coxæ are closed externally; it is very difficult, however, in the case of a small *Longicorn*, with the sternal sutures much obscured by rugulosity to be quite sure without the removal of the mesothoracic epimeron whether the angle of the metasternum absolutely touches that of the prothoracic episternum.

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M. picticornis, sp. nov. Modice elongata; supra opaca, pilis erectis nonnullis sat sparsim vestita, obscure pupureo-brunnea, antennis flavo nigroque læte variegatis, elytrorum lateribus antice anguste flavis; subtus nitida nigra cupreo-purpureoque iridescens, femorum tibiarumque basi et tarsorum articulis ultimis 2 flavis; corpore supra confertim sat fortiter ruguloso; elytris (ad apicem truncatis) præter hanc sculpturam foveis magnis nec profundis (his ab apice ad basin gradatim minoribuset magis crebris) confuse ornatis; sternis sat rugulose punctulatis; abdomine sublævigato. Long., 4½ l.; lat., 1⅓ l.

The first, second, sixth, seventh, eighth, and eleventh joints of the antennæ are entirely black (with a slight coppery tone); the ninth and tenth are entirely yellow, the rest yellow in the basal half and black in the apical half. The basal joint is stout and subcylindric, as long as 2 and 3 together, 2 very short, 3-5 slightly increasing in length successively (5 as long as the basal joint), 6, 7, and 11 each about equal to 3, 8-10 each shorter. The antennæ set back would scarcely reach the apex of the elytra.

Victoria; taken near Berwick by C. French, Esq.; unique in that gentleman's collection.

ECTOSTICTA.

E. ornata, sp. nov. Setis erectis sparsim vestita; rufa, capite prothorace abdomineque nigris, antennis obscuris (articulis 1° 2° que totis et ceteris basi plus minusve late rufescentibus) elytris piceis (spatio communi basali rufo, fasciisque binis albis); antennis quam corpus paullo brevioribus articulo 3° quam 1ᵘˢ manifeste quam 4ᵘˢ multo quam 5ᵘˢ vix longiori, 6°-11° gradatim brevioribus; capite prothoraceque fortiter sat crasse ruguloso; hoc quam latiori parum longiori; lateribus modice rotundatis postice vix sinuatis; elytris apice rotundatis, juxta scutellum utrinque gibbosis, inæqualiter punctulatis; oculis sat tenuiter granulatis. Long., 3 l.; lat., ⅘ l.

Compared with *E. cleroides*, White, this is a smaller much more rufus insect. The base of the elytra is bright red all across, and this red patch extends backward, irregularly narrowing to about the middle of the elytra. From the lateral margin, a little behind the shoulder, a moderately narrow white fascia runs obliquely inward and (slightly) forward, but stops abruptly at the edge of the red patch. The space immediately in front of this fascia, and that between it and the hinder fascia, are the darkest part of the elytra. The hinder fascia is placed slightly behind the middle, is of the same width as the other fascia, and

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runs from the margin inward and scarcely forward to the suture. There is a well-defined gibbosity on each elytron (near the scutellum) on and around which the puncturation is very sparse; the front part of the lateral half of the elytra is very coarsely and not very sparsely punctured, the puncturation becoming closer and less coarse toward the suture and becoming obsolete in about the apical two-fifths of the elytra. The legs are entirely red.

Victoria; near Berwick; taken by Mr. French, and also sent to me by Mr. Sloane.

PHYTOPHAGA.

MEGAMERUS.

M. mandibularis, sp. nov. Mas. Sat elongatus; supra nitidus, subtus cum pedibus tenue pubescens; brunneus, mandibulis atris valde compresso-dilatatis et contortis; capite crebre ruguloso; prothorace leviter sparsius nec subtiliter punctulato; elytris inæqualiter punctulato-rugulosis et fortiter transversim rugatis; segmento ventrali apicali fovea profunda impresso. Long., 9 l.; lat., $3\frac{1}{5}$ l.

A considerably more elongate, less massive, species than *M. Kingi*, Macl., and of different colour, being of a full brown tone. The mandibles (perhaps of the male only) are very peculiar, being enormously compressed, dilated, and bent in their apical half; it is difficult to imagine how they can be serviceable. The antennæ scarcely differ from those of *M. Kingi* of the same sex. Compared with *M. Kingi* the head is rugulose and very much more closely sculptured; the prothorax is narrower, much more distinctly punctured, and with its hind angles not at all prominent laterally; the elytra are much more strongly and unevenly sculptured, and are transversely wrinkled; the impression on the apical ventral segment is very much deeper.

N. W. Australia; in the collection of C. French, Esq.

HISPIDÆ.

EURISPA.

E. nigripes, sp. nov. Sat angusta; æneo-nigra, prothorace rufotestaceo linea mediana rufa notato ad latera sat late niveomarginato, elytris pallide luteis (horum apice summo nigro) margine externo anguste albido; antennis sat brevibus, articulis 2 et 3 sat elongatis, 4-6 brevioribus nec transversis cylindricis, 7-10 transversis, 11 acuminato; prothorace quam transbasin latiori parum longiori, antice angustato, minus crasse vix rugulose punctulato; elytris apicem versus acuminatis breviter spiniformibus, striatis, striis foveis sat

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magnis seriatim impressis, interstitiis postice vix convexis; abdomine (præsertim antice) sat crebre transversim rugato. Long., $2\frac{1}{2}$—3 l.; lat., $\frac{3}{5}$—$\frac{7}{10}$ l.

Mare magis angusto sat parallelo, segmento ventrali apicali postice emarginato.

Femina pone medium manifeste dilatata; abdomine opaco coriaceo; segmento ventrali apicali carina transversa recta instructo.

Near *E. albipennis*, Germ. (which I have never been able to identify), and possibly a colour-var. of that species on the supposition of a slight mistake in Germar's description, according to which the sixth joint of the antennæ is transverse and wider than the fifth, whereas in the examples before me that joint is not transverse, and not at all wider than the fifth (the seventh being the first wider joint). *E. albipennis* is also said to have its front femora ferruginous at the base, and no mention is made of the snowy-white sides of the prothorax. Among the somewhat numerous examples I have seen of the species I am describing I have seen no ferruginous colouring on the femora, and very few specimens in which the lateral vittæ of the prothorax are not well defined. Compared with *E. Howitti*, Baly, this species apart from colour, *inter alia*, has the prothorax not nearly so coarsely and rugulosely punctured, the apical five joints of the antennæ much shorter, and the elytra a little less strongly produced behind into a tail.

S. Australia; Port Lincoln district.

E. simplex, sp. nov. Sat angusta; fere ut præcedens colorata sed elytrorum apice summo haud nigro; a præcedenti differt prothorace antice haud angustato multo magis crasse magis rugulose punctulato; elytris ad apicem multo minus acuminatis. Long., $2\frac{1}{2}$—3 l.; lat., $\frac{3}{5}$—$\frac{7}{10}$ l.

Near *E. Howitti*, Baly, but at once distinguishable by its elytra very much less drawn out at the apex and its antennæ much shorter, with joints 7-10 transverse and much shorter, and its legs entirely black.

Victoria; Alpine district.

E. fraterna, sp. nov. Sat angusta; nigra, pedibus antennarumque parte mediana rufescentibus, prothorace (hoc rufo-trilineato) elytrisque fulvo-testaceis; antennis subelongatis, articulo 1° brevi fere transverso, ceteris quam latioribus plus minusve longioribus; prothorace quam latiori paullo longiori, antice parum angustato, postice subtruncato, minus crasse vix rugulose punctulato; elytris apicem versus acuminatis fortiter productis breviter spiniformibus, striatis, striis foveis sat magnis seriatim impressis, interstitiis angustis postice subcarinatis. Long., 3 l.; lat., $\frac{3}{5}$ l.

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Very close to *E. major*, Blackb.; differing from it by its smaller size, colouring, less coarse prothoracic puncturation, elytral interstices scarcely convex anteriorly, and especially by the almost truncate base of its prothorax; from *E. Howitti*, Baly, it differs by the narrower interstices of the elytral striæ and the much more elongate prothorax which by measurement is considerably longer than its greatest width; from *E. normalis*, Baly, by the anteriorly non-costate interstices of its elytra and its prothorax considerably narrower across the front than across the base; the other described species have the subapical joints of the antennæ much shorter.

N. Territory of S. Australia.

LONGICORNES.

MICROTRAGUS.

M. sticticus, Pasc. The author of this species was unable to state its habitat, and in Masters' Cat. nothing more precise than "Australia" is mentioned. It is worthy of note therefore that I have lately received a specimen taken by Mr. C. T. Musson, F.L.S., at Narrabri, N. S. W.

COCCINELLIDÆ.

SCYMNODES (*Blackb.*, Tr. Roy. Soc., 1888, p. 189).

S. Koebeli, sp. nov. Sat late ovalis; sat convexus; pilis albidis erectis sat dense vestitus; nitidus; sat crebre sat fortiter punctulatus; æneo-niger capite antennis pedibus anticis femoribus intermediis basi tarsis omnibus elytris ad apicem abdomineque rufis; prothorace quam longiori plus quam duplo latiori, elytris basi angustiori, antice leviter angustato, lateribus pone medium fere rectis, angulis anticis prominulis rotundatis, posticis distinctis fere rectis. Long., $1\frac{3}{5}$ l.; lat., $1\frac{1}{5}$ l.

N. S. W.; Gosford; taken by Mr. Koebele.

SCYMNUS.

S. tenebricosus, Bohem. I have lately received from Mr. Koebele an example taken near Sydney, which appears to be this insect, agreeing very well with the description. Mr. Koebele has also given me some examples taken at Mulgoa (N. S. W.), which I judge to be conspecific, although they are considerably larger, and seem a little more minutely punctured; in one of them, moreover, the intermediate (as well as the front) tibiæ are testaceous, and in all of them the prothorax is narrowly rufescent along its front margin. This latter character would perhaps suggest a doubt as to whether my identification is correct, but in

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some specimens the rufescence "needs looking for," and would easily escape the notice of a describer who had not seen specimens having it more defined.

RHIZOBIUS.

R. fugax, sp. nov. Ovalis; sat elongatus; modice convexus; pilis pallidis suberectis sat dense vestitus; sat nitidus; subfortiter vix crebre (elytris mediis suturam versus sparsim minus fortiter) punctulatus, ferrugineus (elytris, prothoracis parte postica mediana, femoribusque apicem versus, piceis exceptis); prothorace quam longiori duplo latiori, antice minus angustato, elytris basi vix angustiori, lateribus parum arcuatis, angulis anticis rotundatis nullo modo productis, posticis fere rectis. Long., $1\frac{4}{5}$ l.; lat., $1\frac{1}{5}$ l.

The prosternal ridge is narrowed forward, but is not sharply pointed at the apex. This character in combination with the presence of erect hairs on the elytra, finer and longer than the general pubescence brings the present insect near *R. Lindi*, Blackb., from which it differs *inter alia* by its more elongate form and very much coarser puncturation. The puncturation is not unlike that of *R. Evansi*, Muls., but is distinctly less close, and near the suture of the elytra finer. Were it not for this latter character I should regard it as possibly a variety of *Evansi*.

N. S. Wales; taken by Mr. Koebele near Whitton.

R. dorsalis, sp. nov. Sat late ovalis; sat convexus; pilis albidis erectis sat dense (nonnullis multo longioribus intermixtis) vestitus; nitidus; supra piceus, prothoracis lateribus et elytrorum regione suturali indeterminate rufescentibus; subtus rufescens, antennis palpis pedibusque rufo-testaceis, femoribus (præsertim posticis) infuscatis; capite prothoraceque subcrebre minus fortiter, elytris magis fortiter nec profunde minus crebre, punctulatis; prothorace quam longiori plus quam duplo latiori, antice minus angustato, elytris basi vix angustiori, lateribus leviter arcuatis, angulis anticis obtusis (certo adspectu rotundatis) posticis rectis. Long., $1\frac{1}{5}$ l.; lat., $\frac{9}{10}$ l.

A small inconspicuous species, chiefly notable superficially for the distinct (but not sharply defined) reddening of the sutural region, which seems to be constant. The flattened surface of the prosternal ridge is triangular, and very sharp in front. The puncturation is strong on the elytra, but considerably less fine on the prothorax.

N. S. Wales; Gosford; taken by Mr. Koebele.

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R. cæcus, sp. nov. Ovalis; convexus; pilis argenteis suberectis sat dense vestitus; sat nitidus; subtilissime sat crebre punctulatus; totus ferrugineo-rufus; prothorace quam longiori vix duplo latiori, elytris basi angustiori, antice parum angustato, lateribus fere rectis, angulis anticis rotundatis haud prominulis, posticis fere rectis. Long., 1 l.; lat., $\frac{7}{10}$ l. (vix).

The silvery pubescence of the upper surface is mingled with fine hairs longer and more erect than the rest. The prosternal ridge is sharply pointed in front, but owing to the strong convexity of the prosternum (of which it forms the flattened median surface) it is less noticeable than in most of the *Rhizobii*, and requires to be looked at from a particular point of view (obliquely from the side) to be seen distinctly; the carinæ limiting the ridge are excessively fine. The prothorax covers the eyes more completely than in most *Rhizobii*, but owing to the thin substance of the former the eyes can be seen through it. It may be distinguished from its Australian congeners, having mixed pubescence and a prosternal ridge sharp in front, by its uniform rufous colour.

N. S. W.; taken by Mr. Koebele at Gosford.

R. lanosus, sp. nov. Sat late ovalis; sat convexus; nitidus; supra pilis erectis ochraceis confertissime vestitus; piceo-niger, haud ænescens, tarsis rufescentibus, antennis palpis abdomineque rufo-testaceis; capite prothoraceque sat crebre subfortiter, elytris fortiter paullo minus crebre, punctulatis; prothorace quam longiori plus quam duplo (postice quam antice haud multo) latiori, lateribus fere rectis, angulis anticis rotundatis vix prominulis, posticis fere rectis. Long., 2 l.; lat., $1\frac{1}{2}$ l.

This species is readily characterised by its non-metallic surface, together with its dense even clothing of erect ochraceous (not silvery or whitish) pile. The flattened surface of the prosternal ridge is very wide (not at all pointed) in front. In my tabulation of *Rhizobius* (Tr. Roy. Soc. S. A., XI., pp. 203-4) the present insect would require the formation of a distinct subsection (line 2, p. 204) as follows:—" B.B.B. Elytra very densely and evenly clothed with erect pubescence."

Queensland; Toowoomba; taken by Mr. Koebele.

R. pulcher, sp. nov. Ovalis; convexus; pilis albido-argenteis brevibus sat dense vestitus; supra testaceus capite et maculis nonnullis in elytris positis infuscatis; subtus piceus abdominis lateribus et apice plus minusve testaceis; pedibus sordide testaceis, femoribus plus minusve infuscatis; capite prothoraceque obscure subtilissime, elytris distincte vix

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crebre, punctulatis; prothorace quam longiori circiter duplo latiori, antice parum angustato, elytris basi haud angustiori, lateribus vix arcuatis, angulis anticis sat rotundatis, posticis rectis; prosterno æqualiter convexo, antice simplici. Long., $\frac{9}{10}$ l.; lat., $\frac{3}{5}$ l.

A prettily-marked little species; the general colour of the upper surface varies a little, the dark markings being less conspicuous on the examples having the ground colour less pallid. The markings are as follows:—A small spot on each side of the scutellum, the suture (where the infuscation is dilated into a large common spot about the middle), and an oblong vitta-like dash on either side near the lateral margins, which in some examples is dilated at its apex, and connected near its front with the median dilatation of the suture. Allied to *R. umbratus*, Blackb., but differently marked, with the front angles of the prothorax not at all prominent, &c.; in *R. umbratus* these angles, though not sharp, are slightly prominent.

N. S. Wales; taken by Mr. Koebele near Mulgoa.

BUCOLUS.

B. convexus, sp. nov. Sat late ovalis; sat convexus; sat nitidus; supra pilis argenteis sat crebre vestitus; nigro-piceus, prothorace abdomine tarsisque rufis; capite planato, crebre subfortiter punctulato; prothorace quam longiori circiter duplo latiori, crebre subtilius punctulato, antice angustato, ad latera valde deflexo; elytris crebre fortius punctulatis. Long., $1\frac{3}{5}$ l.; lat., $1\frac{1}{5}$ l. (vix).

Considerably less wide and depressed than *B. Fourneti*, Muls., but agreeing with that species in structure, the prosternum being prolonged to receive the head in repose, the tibiæ being very strongly dentate externally, and the epipleuræ having very well-defined foveæ.

N. S. W.; taken by Mr. Koebele near Sydney.

LIPERNES.

Blackb., Tr. R. Soc., S.A., XI., p. 211.

L. subviridis, sp. nov. Late ovalis; sat convevus; nitidus; piceo-niger, supra obscure subviridi-micans; subtiliter sat crebre punctulatus. Long., $\frac{9}{10}$ l.; lat., $\frac{7}{10}$ l. (vix).

Differs from *L. angulatus*, Blackb., in its smaller size, æneous tone of colour, base of prothorax not angular in front of the scutellum, and in the closer puncturation of its elytra, which is uniform with that of the prothorax.

N. S. W.; taken by Mr. Koebele at Gosford.

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SERANGIUM.

Blackb., Tr. R. Soc., S.A., XI., p. 209.

S. maculigerum, sp. nov. Late ovale; convexum; nitidum; capillis erectis sparsim vestitum; nigrum, antennis palpis corpore subtus pedibusque plus minus dilutioribus, elytris utrinque macula magna discoidali rufa ornatis; supra sublævigatum; subtus punctulatum. Long., $\frac{7}{10}$ l.; lat., $\frac{3}{5}$ l.

The red spot on each elytron is at about half the length, but is nearer to the suture than to the external margin. Notwithstanding its great difference in size, I cannot find any reason to separate this species generically from *S. mysticum*.

Queensland; taken near Toowoomba by Mr. Koebele.

S. hirtuosum, sp. nov. Sat late ovale; convexum; nitidum; capillis albidis sat elongatis erectis sat dense vestitum; obscure rufum hic illic plus minusve distincte infuscatum, elytrorum sutura anguste nigra; supra leviter vix perspicue, subtus sat manifeste, punctulatum. Long., 1 l. (vix); lat., $\frac{7}{10}$ l.

This species is much like *S. mysticum*, Blackb., in miniature, but of a brighter red color, the head and prothorax scarcely infuscate, the pilosity more conspicuous, and some puncturation traceable on the upper surface.

N. S. Wales; taken near Sydney by Mr. Koebele.

TRICHORCUS (gen. nov. Coccinellidarum).

Ab *Orco* differt corpore haud metallico, subopaco, dense pubescenti.

I can find no structural character to distinguish the genus from *Orcus*, but it seems scarcely possible to place in that genus a non-metallic subopaque species densely clothed with pubescence.

T. cinctus, sp. nov. Hemisphæricus; dense fulvo-pubescens; subopacus; supra brunneus, prothorace nigricanti (basi excepta) albido-marginato, elytris externe testaceo-marginatis (margine a basi retrorsum gradatim dilatato); subtus nigricans, abdomine testaceo; confertim subfortiter punctulatus; clypeo antice late sat fortiter emarginato et ad latera ante oculos dilatato; prothorace antice profunde bisinuatim emarginato, ante basin linea transversa minus distincte impresso; antennis palpisque labialibus flavis, illis apicem versus infuscatis. Long., $1\frac{4}{5}$ l.; lat., 2 l.

This remarkable insect is actually a trifle wider than long. I have seen nothing at all near it.

N. S. Wales; taken near Sydney by Mr. Koebele.

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The Energy of the Electromagnetic Field.

By Professor W. H. Bragg, M.A.

[Read May 3, 1892.]

In an address given to Section A of the Australasian Association for the Advancement of Science, at the Hobart meeting, in January of this year, I showed that an exact analogue of the electromagnetic field due to currents and magnets existed in the case of membranes displaced by uniform pressures or to fixed amounts in an infinite elastic medium; a medium in which, if any element be displaced, there is a force of restitution proportional to the volume of the element and the amount of its displacement.

It is interesting to start with the supposition of the existence of such a medium, and hence develop the theorems which we know to be true of the energy of the field. They follow very simply from this hypothesis.

Suppose a thin membrane in such a medium as I have described above. A uniform pressure per unit area will cause displacement, supposed small. Let the uniform pressure be $4\pi C$, and the total displacement of the membrane, *i.e.*, the volume it moves through, be $\frac{LC}{4\pi}$. Then C corresponds to the current running round a circuit represented by the edge of the membrane, and causing a total induction through its contour equal to LC. The energy so stored up in the elastic medium is $\frac{1}{2}$ × force × displacement, *i.e.*, $\frac{1}{2} LC^2$.

Now, in the medium so disturbed, let a second membrane be placed, and acted on by a uniform pressure, gradually increasing to $4\pi C'$. The medium, although already strained, will make *exactly the same opposition* to the new straining force as if it were unstrained, because from the nature of the medium the force resulting from a new displacement of any small volume already displaced is independent of the previous displacement. So the second membrane will be displaced just the same as if it were the only one, and the work done in displacing it will be $\frac{1}{2} L'C'^2$ (say).

But—and this is the point—whilst this second membrane has been undergoing displacement, so has the first; and the amount of displacement of the first is of course proportional to C', say $\frac{MC'}{4\pi}$. So $\frac{M}{16\pi^2}$ is the amount of displacement through the first

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circuit due to unit pressure on the second. Thus during the displacement of the second membrane the pressure, $4\pi C$, on the first does a fresh amount of work, $\frac{MC'}{4\pi}.4\pi C$, *i.e.*, MCC'. Thus the total energy of the field is

$$\tfrac{1}{2} LC^2 + MCC' + \tfrac{1}{2} L'C'^2,$$

which is the well-known important theorem.

This can be extended to cases in which there are any number of circuits, by taking the corresponding membranes one by one.

It is evident from the symmetry of this equation that the displacement of any membrane B caused by unit pressure acting on a membrane A is equal to the displacement of A caused by unit pressure on B.

We may employ this last principle to find the displacement at any point due to a membrane under uniform pressure, corresponding to a closed circuit. Suppose we require the displacement at a point P in the direction x. Let A be a very small area placed at P perpendicular to x. Then the displacement of A due to unit pressure on the membrane is equal to the displacement of the membrane due to unit pressure on a small membrane coinciding with A.

Suppose a number of membranes placed at regular distances behind A, all perpendicular to x and equal to A; let there be n of them per unit length, and let the series reach to a point B very far from A. Let unit pressure act on each of these. Then the matter in which the membranes are imbedded will be displaced like a solid cylinder, and if d be the displacement of each, $\frac{4\pi}{\mu}$ the elasticity of the medium.

$$A\,n = \frac{4\pi}{\mu} d\,A$$

$$\therefore \quad d = \frac{\mu n}{4\pi}$$

The effect of the displaced cylinder will be the same as if at A there were a total displacement, $\frac{A\,\mu\,n}{4\,\pi}$ spreading out uniformly in all directions, and at B a corresponding inwards displacement. The lines of displacement from A will therefore be practically straight lines; and the amount of displacement of the original membrane is $A\,\mu\,n\,\frac{\Omega}{16\pi^2}$ where Ω is the solid angle subtended by it at A.

The displacement of the original membrane due to the pressure on A is equal to the difference between $A\,\mu\,n\,\frac{\Omega}{16\pi^2}$ and $\frac{A\,\mu\,n}{16\pi^2}$

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$\left(\Omega - \frac{d\Omega}{dx}\frac{1}{n}\right)$: for the latter quantity is the displacement of the membrane due to the cylinder with the small membrane A removed, or which is the same thing, the original cylinder pushed back a distance $\frac{1}{n}$

Thus the displacement through A due to unit pressure on the original membrane $= \frac{A\mu}{16\pi^2}\frac{d\Omega}{dx}$

Thus displacement *at* A $= \frac{\mu}{16\pi^2}\frac{d\Omega}{dx}$ due to unit pressure on membrane.

Hence displacement at A in the direction n due to pressure $4\pi C$ on membrane $= \frac{\mu C}{4\pi}\frac{d\Omega}{dx}$

Further, if P is the pressure at A this displacement

$$= \frac{\mu}{4\pi}\frac{dP}{dx}$$

$$\therefore P = C\Omega + \text{constant.}$$

In this analogy P, of course, corresponds to magnetomotive force.

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THE PHANEROPTERIDÆ OF AUSTRALIA AND POLYNESIA.

By J. G. O. TEPPER, F.L.S.

[Read May 3, 1892].

INTRODUCTION.

The PHANEROPTERIDÆ of the tribe LOCUSTODEA in the Orde of the Orthoptera or Straight-winged insects are scattered over all continents in a limited number of genera and species, but seldom, if ever, occur in such numbers as to become destructive, although all are herbivorous. Many kinds are rare and very rare, being perhaps restricted to small areas by the presence or absence of particular food-plants, certain other insects, peculiarities of soil and climate, &c.

The family is, however, on this account very interesting to the entomologist, and also on that of their peculiar structure, notably the long slender limbs, angular or otherwise peculiarly-shaped pronotum, regular venation of the anterior pair of wings, usually called elytra (or tegmina) which afford good generic or specific distinctions, and the usually short, curved, serrated ovipositor of the females.

Of the habits of the Australian species, and perhaps of most of the others, little appears to be known; the solitary life of the widely scattered individuals rendering the elucidation of their life-history very difficult.

The chief and most recent authoritative monographer of the Phaneropteridæ is Brunner van Wattenroyl, and since the publication of the "Addimenta," 1891, to his excellent "Monographie der Phaneropteriden" (Wien, 1878), no general work appears to have been issued, nor any Australian species described.

In the following pages is presented a concise record of the Australian representatives of the family as far as that is possible under the circumstances. Genera and species, however, not represented in the S. A. Museum will only be recorded, with Brunner's synoptical descriptions in English, while full descriptions will be given of the others from the specimens at disposal and such information about habits and distribution attached as is warranted by the author's observations and experience.

The colour of living specimens is some shade or tint of green in most genera, but is easily bleached by exposure to sunlight as with preserved specimens, and wholly extracted

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through immersion in alcohol, which changes the green into a pale brownish-yellow. Colour is, therefore, a most unreliable character to any one not familiar with the living insects, although it may be perfectly constant for some species, or variable with others; the latter is, however, comparatively rare with indigenous forms. Killing with chloroform is apt to convert the fuscous tints into more or less bright ferruginous shades. Some species, again, are naturally of a testaceous colour, especially those living among the dry grass during the latter part of the very warm and dry summer, acting as a protective gift at a time when scarcity of insect-life causes a keen search by insectivorous birds.

One of the causes that so comparatively few of the Phaneropters find their way into collections is that they are extremely brittle and delicate when dry, so that they are very apt to arrive in a hopelessly fragmentary condition, and impossible to restore to respectable appearance, or for safe determination.

Brunner's types have been inaccessible, but his descriptions and figures are so clear, that the chance of misinterpretation does not appear to be very great. The new descriptions have been drawn up on the same plan of Brunner's, and, I hope, will recommend themselves to your judgment. In several instances the original descriptions have been slightly departed from, or extended by adding some distinctive characters from the specimens before me, preferring to extend the genus or species rather than to form new ones.

The abbreviation "Br. Mon.," followed by figures, refers to Brunner's "Monographie der Phaneropteriden," Wien, 1878, pp. 1-401, published by the K. K. Zool. and Botan. Society of Vienna in their Transactions, which has been followed throughout, and "Br. Mon. Add." to his "Addimenta" to the same in 1891 by the same Society (vol. XLI., part 1., pp. 1-196).

SYSTEMATIC DESCRIPTION.

Tribe Locustodea.

Tarsi depressed. Fore tibiæ provided with foramina.

This tribe is divided by Brunner into 14 families, of which the following is the first in order:—

FAMILY PHANEROPTERIDÆ.

First and second joint of tarsi laterally rounded. Prosternum without appendages. Hind tibiæ above with an apical spine on both sides, below with two spines on each side.

The family is subdivided into 43 groups, with 164 genera, most of which are illustrated by Brunner by a full figure or details of

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one species. I add, here, another, making the total 165. The former number embraces 685 species described by Brunner, of which 100 inhabit Europe, 150 Asia and the Malayan Archipelago, 95 Africa and its islands, 52 North and Central America, 240 South America and West India, 38 Australia, and 16 New Guinea and Polynesia. Of 10 species the habitat was not known, and 15 species, including 3 Australian, inhabit two continents (one species being found in three). Twelve species are, herein, added to the above (all Australian), which raise the total for Australia to 50, and the grand total to 697 species. In the following enumeration the New Guinea, Polynesian and some other species have been included, the former on account of their geographic proximity, and the latter because so closely related to the Australian forms, that their omission might have impaired the completeness of the record.

The following characters are employed by Brunner, and have been adopted by me as leading ones, viz.:—

1. The presence of a spine at the coxæ (or hip-joints) of the fore tibiæ.
2. The form and armature of the fore tibiæ on the upper side.
3. The form of the foramina (open, shell-like, or cleft-like) or assumed auditory organs of the fore tibiæ.
4. The character of the venation of the elytra.
5. The presence and form of the crenulations or dentations at the apex of the ovipositor of the females.
6. The presence and form of the articulately-inserted styles of the subgenital lamina of the males.

These prove very efficient in limiting and defining the groups and genera, while Walker's descriptions in the British Museum Catalogue are, so far as the Locustodeæ are concerned, wholly inefficient for certain recognition, and therefore disregarded in modern classification, especially as he includes the Phaneropteridæ, Decticidæ, Gryllacridæ, &c., in one and the same family, of all of which he only mentions some 71 species altogether as Australian.

Considerable increase in the number of indigenous species may be expected in future, when those of the little explored tropical parts of this continent become better known and determined, for the warmest and warmer parts of the world are the principal home of the Phaneropteridæ. It is hoped that this paper may contribute somewhat to incite more vigorous researches.

A. Group DUCETIÆ (Br. Mon. 15, 108).

Anterior coxæ unarmed. Pronotum with a distinct humeral sinus. Elytra, and sometimes the wings, perfectly explicate. Vertex flat or inclined, somewhat elongated, forming a distinct

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angle with the frontal fastigium. Subgenital lamina of male without free styles, but deeply cleft. Old World species. There are two genera, one with four, the other with two species.

Genus DUCETIA, *Stäl.* (ibid).

Foramina open on both sides, somewhat narrowed. Fore tibiæ sulcate and spinulose above, appearing as if divided laterally at the base. Femora spined below.

DUCETIA JAPONICA, *Thunberg* (ibid, fig. 16).

Elytra somewhat acuminate. Radial and ulnar areas with few venules. Fore margin of wings almost straight, with triangular area near apex.

	Male.	Female.
Length of body	16 mm.	20 mm.
Length of pronotum ...	4 "	4·5 "
Length of elytra ...	26 "	28 "
Width of elytra... ...	5·5 "	5 "
Length of hind femora...	22 "	22 "
Length of ovipositor ...	— "	6 "

Habitat.—Queensland, India, Ceylon, Philippine Is., Japan.

B. GROUP ACRIDOPEZÆ (Br. Mon. 1, 139).

Vertex very much inclined, elongate, fastigium not forming any angle with the front, or scarcely conspicuous, laminately and horizontally produced. Pronotum short, embracing the head. Palpi slender. Femora slender all round.

Genus ACRIDOPEZA, *Guérin* (ibid).

Elytra of the male rather large, of the female short and very much arched; latter without wings. Male without free styles. Ovipositor of female extremely short, valves free, smooth. Monotypic.

ACRIDOPEZA RETICULATA, *Guérin* (ibid, fig. 33).

Brownish. Head paler, spotted with blackish. Antennæ black, with narrow pale-testaceous bands. Elytra of male brownish, marbled, paler and darker, the veins partly blackish; those of the female with one larger and one or two smaller black spots, also the portion of the right elytron, covered at rest by the left, which is deep shining-black. Legs (except base of tibiæ and the tarsi, which are black) testaceous, banded with black. Abdomen black, the covered parts of the segments, also the whole underside of the female, bright crimson, posterior margins with bright blue guttæ, the blue fading after death; of the male the same parts of segments, brownish-testaceous, the guttæ whitish.

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	Male.		Female.	
Length of body ...	20–25	mm.	22–27	mm.
Length of pronotum ...	5	"	5– 6	"
Length of elytra ...	35–42	"	18–20	"
Width beyond base ...	6– 9	"	9–12	"
Width before apex ...	10–13	"	9–12	"
Length of hind femora	21–24	"	16–20	"
Length of ovipositor ...	—		1·8	"

This peculiar insect appears to be very local in its distribution. The males are usually found on the trunks and thick lower branches of Eucalypts *(E. obliqua)*, or the stems of Eucalyptus-shrubs where trees are absent, and in hot sunshine take readily to their wings, but in cooler weather are rather sluggish. The females are also found in similar situations, but more frequently nearer (or on) the ground, among tufts of grass, sedges, or small shrubs. Their movements are slow, and when suddenly approached or alarmed, rise as high as possible on their legs and raise the elytra, at the same time extending the abdomen, thus exposing the brilliant colouring, which, no doubt, serves to ensure their safety from attack by birds, lizards, &c., as denoting inedibility, for they make no attempt to fly or escape. When taken by the hand, a copious brownish fluid is exuded from the mouth, which stains the parts touched,

Habitat.—All the specimens in the Adelaide Museum are from the Mount Lofty Ranges, where they are (or were) by no means rare in some of the gullies watered by a rivulet, occuring there from January to March. In October, 1861, the author observed and captured some at Bundaleer, where they frequented small scattered clumps of stunted Eucalypts. They also are found in Victoria, New South Wales, Queensland, and North Australia.

C. Group APHIDNIÆ (Br. Mon. 19, 146).

Anterior coxæ spined. Frontal fastigium not produced. Vertex produced in the form of a pointed horn or crest-like tooth, much elevated above the fastigium.

Genus Machima, *Brunner* (ibid, 149).

Hind femora and tibiæ with long spines, or leaf-like dilated. Genera and species of this group are chiefly American.

Machima phyllacantha, *Burmeister* (ibid, 150, fig. 39).

Vertex with a short spine. Pronotum unarmed. Colour green, marbled with brownish and with white lines.

	Male.		Female.	
Length of body	20	mm.	25	mm.
Length of pronotum ...	5	"	6·5	"
Length of elytra ...	33	"	35	"
Width of elytra... ...	7	"	8	"
Length of hind femora ...	20	"	24	"

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Habitat.—New Holland (*Serville*); Brazil (*Burmeister*, Geneva Museum). Serville's location of this species is possibly a mistake; it may, however, occur in some of the Pacific Islands, whence specimens may have found their way into the hands of Australian collectors, and through them reached the great French entomologist. The doubt requires to be cleared up, hence the species is inserted here.

D. Group PSYRÆ (Br. Mon. 19, 158).

Vertex flat or tumid, not spined. Fore tibiæ with conchate foramina in front and open ones behind. Elytra mostly of leathery texture and more or less subhyaline, radial veins contiguous, transverse veinlets much raised. Ovipositor longer, or as long as the pronotum, compressed, slender, gradually incurved, apex gradually acuminate, at the base roundly tumescent, margins crenulate or serrulate towards the tip, or rarely unarmed. Subgenital lamina with or without free styles.

The group is chiefly of Asiatic habitat, a few genera belonging to Africa, some species to the Sunda Islands, and one to New Guinea.

Genus Casigneta, *Brunner* (Mon. 19, 163; fig. 46).

Fastigium of vertex contiguous in a line with the frontal.

Disk of pronotum subrotundate, deflexed lobes, roundly inserted. Mesosternal lobes triangular, metasternal rounded. Fore tibiæ slender, doubly as long as pronotum, sulcate above, and distantly spined.

Casigneta lamellosa, *Brunner* (Mon. Add. 77).

Cerci (male) very long, scarcely incurved, apex claw-like. Subgenital lamina compressed, longer than pronotum, base divided in two widely-gaping lamella contiguous from the middle, acuminate,

	Male.	
Length of body	22	mm.
Length of elytra	38	"
Width of elytra	7	"
Length of pronotum...	5	"
Length of hind femora	24·5	"

Habitat.—Celebes.

Genus Phaula, *Brunner* (Mon. 20, 167; fig. 48).

Shiningly-smooth. Fastigium of vertex depressed, frontal acuminate. Pronotum with disk rotundate, and deflexed lobes roundly inserted. Elytra linear, margins parallel, branches of veins straight, mediastinal scarcely visible, first radial branch

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oblique, simple, or with three branchlets, of which the first is branched and terminating in the hindmargin, transverse veinlets irregular. Fore tibiæ terete above and spined, or subsulcate and unarmed. Ovipositor shining.

The genus occurs in Borneo, the Philippine Islands, Java, Sumatra, Singapore, Africa, &c., one species extending to New Guinea.

PHAULA PEREGRINA, *Br.* (Mon. Add. 84).

Disk of pronotum flat, rather concave, with the deflexed lobes obtuse-angularly inserted. Size small. Subgenital lamina (male) short, obtuse triangular.

	Male.
Length of body	20 mm.
Length of pronotum ...	5 "
Length of elytra	32 "
Width of elytra	7·5 "
Length of hind femora ...	20 "

Habitat.—New Guinea, Waihou Islands.

PHAULA DENTICAUDA, *Brunner* (ibid).

Size much larger.

Habitat.—Celebes.

E. GROUP EPHIPPITHYTÆ (Br. Mon. 21, 188).

Anterior coxæ armed with a spine. Vertex flat or tumid, not spined. Foramina of fore tibiæ on both sides open or rimate. Ridges of pronotum rounded or acute, but neither crested nor crenulate. Ovipositor very short and shiningly-smooth, valves free. Subgenital lamina of male in narrow lobes resembling produced styles, which are, however, absent, except in *Dictyota*, where free ones are present.

Almost wholly endemic and comprising seven genera.

Genus EPHIPPITHYTA, *Serville* (ibid, 188).

Pronotum constricted before the midde, saddle-shaped. Hind femora spined below throughout their whole length. Ovipositor as long or slightly longer than the cerci.

EPHIPPITHYTA TRIGINTIDUOGUTTATA, *Serville* (ibid, fig. 54).

Yellowish-green, shining. Face, deflected lobes of pronotum, meso- and meta-notum, and sometimes the first segments of the abdomen with creamy white stripes laterally. Occiput spotted with brown. Antennæ uniformly yellowish. Fore part of disk of pronotum and the posterior angles with short black stripes. Elytra green, subpellucid, veins and veinlets very prominent, radial vein and hindmargin marked with black angular spots

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(about 32 in the figure, hence the specific name). All the femora and some of the tibiæ have the extremities black. Hind tibiæ with three brownish bands, which are sometimes obsolete.

	Male.	Female.
Length of body ...	32–36 mm.	31–35 mm.
Length of pronotum ...	6– 8 "	7– 8·5 "
Length of elytra ...	48–58 "	54–61 "
Width of elytra ...	10–13 "	10–14 "
Length of hind femora	27–33 "	32–37 "
Length of ovipositor ...	— "	3·5–4 "

Habitat.—New Holland (*Serv.*), New South Wales, Queensland, North Australia (*Brun.*).

Comparing the figure and descriptions of Brunner, usually very exact, with Prof. McCoy's (Prod. Zool. Vict., Dec. XII., plate 120; 1885) and the specimens in the Adelaide Museum it is apparent that both the latter represent the *same* species, and are distinct from the first, as shown by the detailed description below. Prof. McCoy's description takes no cognizance of the venation of the elytra, nor the difference in the contour of the wings. His figures are excellent, however.

EPHIPPITHYTA QUADRIGESIMAGUTTATA, *sp. nov.*

(*E. trigintiduogutta*, McCoy, Prod. Zool. Vict., 120).

Dull browinish-green, shining. Face, lateral lobes of pronotum, and sides of meso- and meta-thorax with milk-white stripes. Occiput blackish. Antennæ basal part green for two-fifths of entire length, remainder brown. Anterior part of pronotum and hind angles blackish to black, also the extremity of the shoulders of the elytra. Latter semipellucid, green, veins much raised, the costal field near apex blackish, and from about 38 to 45 more or less intensely black guttæ along the radial vein (9-11), the hindmargin (7-10), and the anterior branch of the ulnar vein (2-3). All the femora and tibiæ are more or less marked with black at the extremities, as are also the tips of the spines. The hind tibiæ have three broad blackish bands on the inner side, the terminal one extending to the tarsi.

	Male.	Female.
Length of body ...	21–24 mm.	28 mm.
Length of pronotum ...	5– 7 "	5·5 "
Length of elytra ...	38–41 "	48 "
Width of elytra ...	7– 9 "	8–9 "
Length of hind femora	25–26 "	28 "
Length of ovipositor ...	— "	3 "

Habitat.—Murray Scrub, Sandy Creek, South Australia; Victoria (*McCoy*).

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This species differs from *E. 32-guttata*, Serville, by the elytra being much more suddenly contracted beyond the middle; the colours of the marginal space, the greater number, disposition and intensity of the guttæ, the different curvature of the first radial branch and the colour of the antennæ. After death the body, legs, and parts of the elytra become more or less brown, and in alcohol the whole insect assumes a pale testaceous tint, except the dark spots.

The insect feeds on the Australian Cyprus Pine *(Callitris verrucosa)*, and is but seldom seen. The three specimens in the Adelaide Museum were obtained at Monarto and Sandy Creek. At the former locality the writer captured three specimens close-together on one tree in 1872.

Genus EPHIPPITHYTOIDEA, *gen. nov.*

Fastigium of vertex terete, not much depressed, sub-contiguous with the frontal. Face moderately long, much retracted, slightly sulcate laterally, carinate about the eyes. Pronotum saddle-shaped, constricted, disk rounded posteriorly. Deflexed lobes roundly-inserted in front and angular behind, and distinctly sulcate. Elytra narrow-linear, hindmargin concave, nearly of equal width throughout, apex rounded; radial veins contiguous for some distance beyond the first radial branch; the latter is emitted slightly before the middle and forked towards its extremity; anterior ulnar vein parallel with radial branch emitting four branchlets to hindmargin. Transverse veinlets much raised, numerous, oblique, and closely reticulate. Tympanal area small, veins very strong, and a speculum in both elytra of the male. Wings as long as the elytra, apex rotundate. Fore and middle femora near apex with a few small spines and distant short hairs, hind femora armed nearly to the base, knee-joints with long spinose lobes, basal part very much incrassated, apical part very slender. Fore tibiæ with rimato-conchate foramina on both sides, terete above, posterior margin spined. Meso- and meta-sternum with short broad lobes. Supra-anal lamina of males deflexed between the hairy cerci; latter stout, bilobed at apex. Subgenital lamina in two lobes very thick in the middle, styles not apparent. Female unknown.

This genus differs from all others by the subtriangular lobes of the pronotum, the latter being convex above, besides many other distinctions. In general appearance, however, it resembles *Ephippithyta* so much that a superficial observer may easily mistake it for a smaller variety.

EPHIPPITHYTOIDEA SPARSA, *sp. nov.*

Dusky yellowish varied with grey and blackish dots, &c., shining. Face black, the labium, a long wedge-like stripe

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in the middle, two small spots below the same, a short stripe on either side, the base of the antennæ, and the cheeks palo yellowish. Eyes prominent, globose, dark brown. Pronotum, fore and middle femora and tibiæ, also the hind femora near the base blackish above, with very numerous pale round dots; exterior of hind femora with two black lines contiguous with black bars beyond; knee-joints black, also both extremities of hind tibiæ and an intermediary band. Abdominal segments partly blackish banded. Elytra sub-pellucid, veins ochraceous, reticulating veinlets mostly whitish, except within some black spots along the radial and ulnar veins, of which there are about 12-14. Wings dusky.

	Male.
Length of body (male only) ...	25 mm.
Length of elytra	38 "
Width of elytra	5 "
Length of hind femora	19 "

Habitat.—Roebuck Bay, Western Australia *(Messrs. A. E. Krapton* and *Tepper, jun.).* A single specimen was captured in November, 1891.

Genus ALECTORIA, *Brunner* (female), (Mon. Add. 10, 95; fig. 15).
(Synonym, *Hectoria*, Tepper (male) (Trans. Roy. S. A., vol. XI.)

Pronotum deeply constricted before the middle and crested behind. Crest with short tumid base, hollow, open below where projecting beyond the base, laterally with five diverging curved veins ending in the inferior hindmargin; anterior margin of pronotum with a smaller spine and a larger on each side behind the anterior constriction in the male. Elytra rugulose, first radial branch emitted much behind the middle, simple. Subgenital lamina of male deeply and roundly emarginate. Ovipositor short, not longer than cerci.

Brunner's description of the genus is taken from the female, alone, mine *(loc. cit.)* from the male, the latter supplementing the former in various details. In Brunner's figure the crest is represented with subparallel concentric lines of veins, while in my specimens they appear as described above, the eyes are also much larger than shown by the figure. Further, the fastigium of the vertex is declining and not at all prominent. The antennæ have the tips black, and five very narrow blackish rings at equal distances, the last about the middle, from thence to the base they are absent and the colour uniformly pale-green. The elytra have the margins almost parallel, narrowing very slightly to the obliquely truncate apex, *not suddenly narrowed* beyond the middle. The tympanal area of the elytra of the male is ample in both, the transverse plicate vein in the left elytron is,

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however, very much stouter than in the right. All these differences are probably sexual, some are certainly so.

ALECTORIA SUPERBA, Br. (female) (ibid) (*Hectoria Pontoni*, Tepper, male).

Olive (or yellowish) green. Crest of pronotum greenish-yellow with ferruginous and black crenulate margin. Elytra and legs marked with brownish spots and bands. All the tarsi of both sexes are brown.

	Male.	Female.	Female Nymph.
Length of body... ...	20 mm.	36 mm.	15 mm.
Length of pronotum ...	5 "	15 "	3 "
Length of elytra ...	45 "	58 "	11 "
Width of elytra near base	8 "	12 "	4·5 "
Width of elytra {beyond / middle}	7 "	9 "	3 "
Length of hind femora...	24 "	32 "	18 "
Length of ovipositor ...	— "	2 "	1 "

Habitat.—Peak Downs, Queensland *(Brunner)*; Beltana *(legit F. A. Ponton)*, Terowie *(legit J. M. Bagot)*, South Australia.

Genus CAEDICIA, *Stäl.* (Br. Mon. 21, 189).

Dorsal part of pronotum flat, lateral edges more or less angular. Hind femora unarmed, or only with spines beyond the middle. Elytra lanceolate or slightly dilated beyond the apex. Deflexed lobes of pronotum higher than long; hind margin of meso- and meta-sternum lobed, lobes as long as high. Breast very broad. Deflexed lobes highest in the middle, hind margin either rounded or straight. Marginal area of elytra irregularly veined. Hind femora very stout at the base. Fastigium of vertex acuminate, almost contiguous with the frontal.

Thus far the above characters are in common with the remaining genera of the group to a greater or lesser extent, the following are the distinctive ones of the genus:—Elytra gradually narrowed from the middle, the first radial branch forked at or somewhat before the middle.

The species are all Australian excepting two from tropical West Africa.

CAEDICIA PICTIPES, *Stäl.* (ibid, 90).

Shiningly-ferruginous, striped with black. Disk of pronotum black, lateral stripes yellow. *Legs banded with black.*

Length of body (male and female) ...	30–32 mm.
Length of pronotum	6 "
Length of elytra	40–42 "
Width of elytra	9 "
Length of hind femora	27–28 "
Length of ovipositor	2 "

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Habitat.—Cape York, Queensland (*Stäl.*); Tongatabu (*Brunner*).

CAEDICIA MARGINATA, *Brunner* (ibid, 191).

Ferruginous, varied with green. Legs green, not banded. Fore tibiæ sulcate and spined above along the external margin. Meso- and meta-sternal lobes triangular. Hind margin of elytra straight or slightly sinuous. Hind margin of pronotum and tympanal area bordered with black. Size large.

	Male.
Length of body	19 mm.
Length of pronotum	4·5 "
Length of elytra	35 "
Width of elytra	6 "
Length of hind femora	23 "
Length of ovipositor...	—

Habitat.—Murray Bridge, South Australia; Kangaroo Island (*Tepper*); New Holland (*Brunner*).

Brunner's description of the male agrees very well with the specimens in the Adelaide Museum, including females, and larvæ and nymphs of both sexes, which were obtained in January and March, 1884, by the author at the above localities respectively (also an adult male). The following characters are supplementary. The prothorax, legs and antennæ are wholly ferruginous, the abdomen purplish, the elytra pale ferruginous in front of the radial veins, the colour extending partly to the costal margin and also to the base and margin of the triangular ulnar area, the remaining spaces being pale green, the colours shading gradually into each other. The dark spotted borders are very narrow, and the knee-joints of the femora blackish or brown.

CAEDICIA CONCISA, *Brunner*, (ibid, 192).

Bright green. Pronotum and tympanal area not spotted. Anterior margin of elytra bordered with ferruginous, remainder bright-green, opaque; radial branch forked before the middle, transverse veinlets irregular.

	Male.
Length of body	23 mm.
Length of pronotum...	5·5 "
Length of elytra	29 "
Width of elytra	7·5 "
Length of hind femora	23 "

Habitat.—North Australia (*Brunner*).

CAEDICIA LONGIPENNIS, *Brunner* (ibid, 192, fig. 55).

Elytra green, pellucid, radial branch forked beyond the middle, transverse veinlets parallel.

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	Male.	Female.
Length of body ...	23 mm.	26 mm.
Length of pronotum ...	5 "	6·5 "
Length of elytra ...	40 "	42 "
Width of elytra ...	7 "	9 "
Length of hind femora	25 "	28 "
Length of ovipositor ...	— "	2 "

Habitat.—Sydney, New South Wales; Queensland (*Brunner*).

CAEDICIA VALIDA, *Walker* (McCoy, Prod. Zool. Vict., Dec. XII., t. 120).

Dull green. Abdomen and legs brownish-green; face, lobes of pronotum, femora exteriorly, and the tympanal area of female, whitish. Disk of pronotum subequally wide. First radial branch forked before the middle. Cerci of male straight Ovipositor of female much curved towards the apex.

	Male.	Female.
Length of body ...	25 mm.	27 mm.
Length of pronotum ...	6 "	6 "
Length of elytra ...	32 "	42 "
Width of elytra ...	9 "	10 "
Length of hind femora	17 "	23 "
Length of ovipositor ...	—	5 "

Habitat.—Melbourne, Victoria.

As neither the description, so far as given by Walker and McCoy, nor the excellent figures of the latter appear to agree with any of Brunner's species or those in the Adelaide Museum, this species (*Phaneroptera valida*, Walker and McCoy) is recorded here, although somewhat doubtfully, as some of the requisite characters (venation) are not included in the original descriptions. The figures of McCoy, however, plainly denote its position in this genus.

CAEDICIA LONGIPENNIOIDES, *spec. nov.*

Size large. Olive-green, abdomen much duller. Disk of pronotum wider behind, lateral margins narrow, pale testaceous; deflexed lobes of pronotum wide behind the middle, lower margin slightly sinuate, posterior rounded. Elytra subpellucid, with irregular subparallel veinlets, which are distinct and darker than the inclosed membrane. First radial branch forked in the middle, with two, sometimes three, simple ones beyond. Cerci of male incurved, so that the tips touch or sometimes cross each other. Subgenital lamina neither very acute nor narrowed. Ovipositor of female about half the length of the disk of pronotum.

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	Male,	Female.
Length of body	10 mm.	25–28 mm.
Length of pronotum ...	6·5 "	6·5–7 "
Length of elytra	37 "	40–45 "
Width of elytra	6·5 "	12 "
Length of hind femora ...	19 "	25 "
Length of ovipositor ...	— "	2·5–3 "

Habitat.—Vicinity of Adelaide, South Australia (2 fem.); Wentworth, New South Wales. Captured in January and February, feeding on shrubs of Bursaria.

The species differs from *C. longipennis* in the lobes of the pronotum being widest behind the middle; in the first radial branch being divided at or behind the middle, in the greater width of the elytra, and in the purplish colour of the abdomen. From *C. major* it is separated by the shorter body, &c. The insects are rare.

CAEDICIA SEPTENTRIONALIS, *Brunner* (Br. Mon., 139).

Olive green. Elytra scarcely longer than the hind femora. Tranverse veinlets irregular, first radial branch forked before the middle, first branchlet sometimes divided again.

	Male.	Female.
Length of body	24 mm.	29 mm.
Length of pronotum ...	5 "	6 "
Length of elytra ...	35 "	32–36 "
Width of elytra ...	8·5 "	9 "
Length of hind femora ...	24 "	24–27 "
Length of ovipositor ...	—	1·5 "

Habitat.—Rockhampton, Port Denison, Queensland (*Brunner*).

CAEDICIA MAJOR, *Brunner* (ibid).

Size large. Elytra rounded at the hind margin, very broad, extending considerably beyond the hind femora; first radial branch forked before the middle, the only succeeding one simple; transverse veinlets distant.

Length of body (female)	42 mm.
Length of pronotum	8 "
Length of elytra	50 "
Width of elytra	15 "
Length of hind femora	28 "
Length of ovipositor	2 "

Habitat.—Cape York, Queensland (*Brunner*),

CAEDICIA OLIVACEA, *Brunner* (ibid).

Greenish-olive, lateral ridges of pronotum ferruginous. Fore tibiæ unarmed, except apical spine. Hind femora spined below.

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Lobes of metasternum triangular. Radial branch forked before the middle.

Length of body (male and female) ...	23 mm.
Length of pronotum...	5–6 "
Length of elytra	32 "
Width of elytra	10 "
Length of hind femora	18 "
Length of ovipositor (female) ...	3 "

Habitat.—Sydney, New South Wales; Port Denison, Rockhampton, Queensland; Eastern Australia (*Brunner*).

CAEDICIA INERMIS, *Brunner* (Br. Mon., 194).

Greenish-yellow. Hind femora unarmed below. Lobes of metasternum rounded (also *C. scalaris*). First radial branch forked before the middle.

	Male	Female.
Length of body	18 mm.	22 mm.
Length of pronotum ...	4·8 "	5 "
Length of elytra	30 "	29 "
Width of elytra	8 "	9 "
Length of hind femora	17 "	17 "
Length of ovipositor ...	—	3 "

Habitat.—North Australia, Western Australia (*Brunner*).

CAEDICIA HALMATURINA, *spec. nov.*

Dusky yellowish-green. Disk of pronotum wider behind, deflexed lobes as long as high, broadest in the middle, lower margin semi-circular, angular ridges pale-testaceous. Elytra oblong oval, radial veins closely contiguous and quite straight, except near apex, the anterior one terminating in frontal margin; first radial branch curved near base, forked before the middle, succeeded by two faint simple ones. Tympanal area very small. Hindmargin with blackish dots. Posterior part of metanotum, foraminal part of fore tibiæ and the upper side of abdomen purplish-crimson, posterior part of segments much darker. Cerci straight, almost parallel. Ovipositor short and sharply curved.

	Female.
Length of body...	19 mm.
Length of pronotum	4·5 "
Length of elytra	25 "
Width of elytra	6·6 "
Length of hind femora...	15 "
Length of ovipositor	3 "

Habitat.—Kangaroo Island, where a specimen of a female was captured by the author on March 12, 1884, near Mount Tisbet.

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The species approaches *C. inermis* in appearance, but differs in shorter broader elytra, spinose fore tibiæ, &c., and the purple colour of the abdomen and knees.

CAEDICIA SCALARIS. *Brunner* (ibid, 195).

Pale-green. Elytra with very distinct veins, first radial branch forked beyond the middle, and the transverse venules very regular and ladderlike.

	Male.
Length of body	21 mm.
Length of pronotum	5 "
Length of elytra	32 "
Width of elytra	8 "
Length of hind femora	18 "

Habitat.—Sydney, New South Wales (*Brunner*).

CAEDICIA MINOR *Brunner* (Br. Mon., 195).

Fore tibiæ terete above, spined along external margin. Hind-femora below armed with 8-10 spinelets along the posterior margin. Size small.

	Male.	Female.
Length of body	20 mm.	22 mm.
Length of pronotum ...	4·2 "	4·8 "
Length of elytra ...	30 "	35 "
Width of elytra ...	6 "	7 "
Length of hind femora...	18·5 "	22 "
Length of ovipositor ...	— "	1·5 "

Habitat.—Port Denison, Queensland (*Brunner*).

CAEDICIA HOSPES, *Brunner* (ibid, 196).

Resembling *C. minor*, but much larger. Hind femora below armed with 15-20 spinelets.

	Female.
Length of body	26 mm.
Length of pronotum	7 "
Length of elytra	45 "
Width of elytra	13 "
Length of hind femora	27 "
Length of ovipositor	2 "

Habitat.—Amboyna (*Brunner*).

CAEDICIA OBTUSIFOLIA, *Brunner* (ibid).

Vertex very oblique. Fore tibiæ unarmed above (except apically). Radial branch forked much before the middle. Hind femora below with 8-10 spinelets. Ovipositor very small. Eyes oblong. Elytra rounded at apex.

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	Male.	Female.
Length of body	23 mm.	23 mm.
Length of pronotum ...	5 "	5 "
Length of elytra	28 "	28 "
Width of elytra	9 "	9 "
Length of hind femora ...	17 "	17 "
Length of ovipositor ...	— "	1·5 "

Habitat.—Cape York, Queensland (*Brunner*).

CAEDICIA ACUTIFOLIA, *Brunuer* (ibid, 197).

Vertex flat, eyes globose. Elytra distinctly acuminate. Radial vein with four branches. Hind femora below armed with 12-15 spinelets along anterior margin. Ovipostor very short.

	Female.
Length of body	28 mm.
Length of pronotum	6 "
Length of elytra	38 "
Width of elytra	10 "
Length of hind femora	21 "
Length of ovipositor	1·5 "

Habitat.—Cape York, Queensland (*Brunner*).

CAEDICIA BISPINULOSA, *Brunner* (Br. Mon., 197).

Size small. Vertex flat. Eyes globose. Elytra with scattered brownish dots in the disk, radial branch forked in the middle. Hind femora below, with two apical spots. Ovipositor long roundly curved and acuminate.

	Female.
Length of body	21 mm.
Length of pronotum	4 "
Length of elytra	27
Width of elytra	6·5
Length of hind femora...	15 "
Length of ovipositor	3 "

Habitat.—Sydney, New South Wales (*Brunner*).

CAEDICIA HIRSUTA, *spec. nov.*

Size small. Eyes oval, brown. Pronotum subconcave, de flexed lobes rounded below, equally high as long. Elytra rather narrow; veinlets of marginal area irregular and distant, connected by crowded reticulation, first radial branch forked before the middle, succeeded by three more, of which the last is forked near its termination; anterior ulnar vein with two to three branchlets. Legs very slender, all covered, as well as the pronotum, with short stiff hairs. Hind femora spined below, the others unarmed. Fore and middle tibiæ with minute spines

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below, also hind tibiæ above and partly below. Meso- and meta-sternal lobes triangular, acuminate, latter much larger than the former. Abdomen, subgenital lamina, and cross-wise incurved cerci hirsute.

	Male.
Length of body	20 mm.
Length of pronotum	5 "
Length of elytra	37 "
Width of elytra	8–10 "
Length of hind femora	24 "
Length of hind tibiæ	24 "

Habitat.—Yam Creek, North Australia (*Prof. R. Tate*, March, 1882.

This species differs from all others within the group by the short stiff tomentum with which most parts are invested, and by the ulnar vein being branched and forked. There are only two male specimens, which originally may have been green, but through long immersion in alcohol, have become uniformly pale testaceous in colour. When the female is discovered it may perhaps be necessary to form a new genus for the reception of this species.

CAEDICIA ROSEOPENNIS, *spec. nov.*

Green and ferruginous. Size small. Vertex flat. Eyes globose, brown with black markings. Head purplish, pronotum, legs, abdomen, and the elytra in part ferruginous, remainder of the last green. Disk of pronotum bordered purplish-brown laterally. Deflexed lobes angularly inserted, much higher than long, lower margin subsinuate. Elytra resembling those of *Symmachis* in outline and venation, disk with small, remote, dusky spots along the middle, hindmargin with minute, crowded black dots. First radial branch forked much before the middle, second simple, third indistinct, much bent and ramified. Tympanal area of male very short, plicate veins irregular and enclosing a subcircular opaque area of dark-brown colour. Wings transparent, pale rose-colored, except towards apex, veinlets green. All femora wholly unarmed, marked with fuscous stripes exteriorly. Fore tibiæ subterete above, with a few spinelets below towards apex. Meso- and meta-sternal lobes subrotundate, latter much larger than former. Ovipositor not much longer than cerci, much incurved, gradually acuminate. Subgenital lamina of male terminating in two slender terete lobes.

	Male.	Female.
Length of body ...	13 mm.	20 mm.
Length of pronotum ...	4 "	5 "
Length of elytra ...	24–26 "	25 "
Width of elytra ...	5 "	6 "
Length of hind femora	13 "	14 "
Length of ovipositor ...	— "	2½ "

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Habitat.—Cooke's Plains, east of the Lower Murray River, where one female and four males were captured by the author on January 5th, 1887. The insects appeared to feed on *Bursaria spinosa*.

This species resembles *Symmachis* considerably in outline and venation of the elytra, and also in the form of the deflexed lobes of the pronotum, it also appears to exhibit affinities with *C. inermis* and *C. bispinulosa*; from all of which it differs by the rosy colour of the wings, the form of the lobes of the pronotum, the unarmed femora, &c.

CAEDICIA PORRECTA, *Brunner* (Mon. Add. 96).

Dull olive-green. Eyes oblong. Pronotum with the disk very flat, scarcely wider behind, lateral ridges brownish red, deflexed lobes highest beyond the middle. Elytra wider than the length of pronotum, the first radial branch forked in the middle and again near its end. Hind tibiæ sulcate above and unarmed, excepting the apical spine. Hind femora spined towards the apex. Ovipositor very short.

	Female.
Length of body...	26 mm.
Length of pronotum	6·8 "
Length of elytra	40 "
Width of elytra	9 "
Length of hind femora...	22 "
Length of ovipositor	2 "

Habitat.—Rockhampton, Queensland.

Genus DIASTELLA, *Brunner* (Br. Mon., 198).

Elytra widest in about one-third part of their length from the apex; radial branch forked at (or near) the base. Fore tibiæ sulcate and unarmed, excepting the apical spine. All femora spinulose below. Besides other distinctions, this genus differs from the preceding by the short broad anterior femora.

DIASTELLA LATIFOLIA, *Brunner* (ibid, fig. 56).

Pale green. Antennæ, and also the fore and middle legs brownish-yellow marbled with brown. Hind tibiæ with two brownish bands. Elytra coriaceous, opaque. Abdomen purplish above.

	Male.
Length of body	23 mm.
Length of pronotum	6 "
Length of elytra...	39 "
Width of elytra	12 "
Length of hind femora	21 "

Habitat.—Moreton Bay, Queensland *(Brunner)*.

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DIASTELLA FLEXUOSACERCATA, *Brunner* (ibid, 98).

Pronotum scarcely wider behind than in front. Elytra with zebra-like oblique brownish stripes. Cerci of male elongate and flexuose.

	Male.
Length of body	22 mm.
Length of pronotum	5 "
Length of elytra	37·5 "
Width of elytra	10·2 "
Length of hind femora	21 "

Habitat.—New Guinea.

Genus PROTINA, *Brunner* (Mon. Add., 10, 98, fig. 16).

Face somewhat swollen. Pronotum rather large, not constricted, disk anteriorly plain, posteriorly-produced and suddenly incurved, forming a pointed transverse ridge, deflexed lobes roundly inserted, highest behind the middle. Elytra broad, first radial branch forked before the middle. Hind femora with compressed base, spined beyond the middle. Hind tibiæ curved towards the apex. Mesosternal lobes triangular, metasternal rounded. Ovipositor rather long.

PROTINA GUTTULATA, *Brunner* (ibid).

Olive-green. Antennæ ringed with black. Elytra with distant, small, irregularly-scattered brown spots.

	Female.
Length of body	33 mm.
Length of pronotum	8·5 "
Length of elytra	50 "
Width of elytra	15 "
Length of hind femora...	27 "
Length of ovipositor	7 "

Habitat.—Peak Downs, Queensland.

Genus SYMMACHIS, *Brunner* (Br. Mon., 21, 199).

Fastigium of vertex obtuse, horizontally contiguous with the frontal one. Elytra broadest in the middle or beyond, radial branch forked in the middle, tympanal area of male very short.

Brunner established the genus upon the male only. I consider a specimen of a female in the Adelaide Museum as appertaining to this genus ; it has served me for the following description.

SYMMACHIS LACTEIPENNIS, *Brunner* (ibid, fig. 57).

Whitish-green. Head, pronotum, and femora whitish. Lower margin of deflexed lobes of pronotum semi-circularly rounded, gradually passing into hindmargin. Elytra pale-green, pellucid, postradial vein much curved at apex, terminating in hindmargin;

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first radial branch forked before the middle, second and third simple; ulnar vein much branched, forked at its termination, reaching hindmargin one-third from apex; primary transverse veinlets net-like branched. Tympanal area simple, without transverse, raised veins, a small brown spot at the base opposite to another near hind angle of disk of pronotum and a third at the termination of the plicate vein. Anterior tibiæ near foramina and at the base, also the ulterior lobes of anterior tarsi, fuscous. Ovipositor short, broadly lanceolate, acute, hirsute (as well as cerci, which it scarcely exceeds), disk shining, margins most minutely serrate at and near apex. Subgenital lamina very short, sub-triangular.

	Male.	Female
Length of body	17 mm.	15 mm.
Length of pronotum ...	5 "	4 "
Length of elytra	30 "	28 "
Width of elytra	7 "	7 "
Length of hind femora ...	18 "	15 "
Length of ovipositor ...	—	2·5 "

Habitat.—Murray Bridge, South Australia, where the female was captured by Mr. C. Poare during the early part of April, 1891. The insect appears to be rare.

Notwithstanding the discrepancy of the smaller size of the female, which may be due to dwarfing or locality, and other differences, hesitation to form a new species seems to be justified in this case, until more material comes to hand.

Genus DICTYOTA, *Brunner* (Br. Mon. 22, 199).

Pectus compressed. Meso- and meta-sternal lobes longer than broad. Deflexed lobes of pronotum highest beyond the middle, inferior margin emarginate over the coxæ. Elytra with the transverse veinlets in close parallel lines in the marginal area. Base of hind femora very slender.

Besides the above synoptical characters the genus is distinguished by the short vertex, the high ridges surrounding the antennæ, which exceed the frontal vertex considerably, and the sharply angular pronotum.

The exceptional character of free styles in connection with the subgenital lamina connects this genus with several other groups notably the EURYPALPÆ (monotypic) from Borneo, Sumatra, &c.

DICTYOTA VIRIDISSIMA, *Brunner* (Br. Mon., 199).

Bright-green and whitish. Pronotum with rough, transverse, lateral ridges very minute or absent. Elytra in the middle about one and a-half times as wide as the length of the pronotum; transverse veinlets in the marginal area rather remote, radial branch forked in the middle. Size small.

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	Male.	Female.
Length of body	22 mm.	25 mm.
Length of pronotum ...	5 "	6 "
Length of elytra	31 "	40 "
Width of elytra	7·5 "	11 "
Length of hind femora ...	20 "	26 "
Length of ovipositor ...	— "	4 "

Habitat.—Rockhampton, Moreton Bay, Queensland *(Brunner).*

DICTYOTA INDIVISA, *spec. nov.*

Size moderate. Head (except vertex), all femora, and sternum whitish. Pronotum wider behind, lateral carina ferruginous. Eyes brown. Elytra dull olive-green, radial and ulnar veins brownish, former bordered paler at the base. Transverse veinlets in the marginal area rather remote. Radial veins widely separate at the apex, first branch not forked, nor any of the three succeeding ones (to this character the specific name alludes). Cerci not much incurved. Abdomen greenish, banded with brown. Ovipositor about twice as long as the cerci.

	Female.
Length of body	23 mm.
Length of pronotum	6 "
Length of elytra...	38 "
Width of elytra	9 "
Length of hind femora	19 "
Length of hind tibiæ	14 "
Length of ovipositor	5 "

Habitat.—Vicinity of Adelaide, the only specimen before the author, having been captured by Mr. Zietz, jun., in the parklands of the city on April 26, 1889. It appears to have been overlooked hitherto by collectors.

The species is allied to *D. viridissima*, Brunner, but differs chiefly in proportions, the four simple radial branches, and the comparatively short hind tibiæ.

DICTYOTA COSTULATA, *Brunner* (ibid, 201).

Size large. Olive-green, head and pronotum whitish, latter with rough transverse ridges; transverse veinlets of marginal area of elytra very close, radial branch forked much before the middle, succeeded by three simple ones.

	Male.
Length of body	30 mm.
Length of pronotum	9 "
Length of elytra...	50 "
Width of elytra	13 "
Length of hind femora	29 "

Habitat.—Sydney, New South Wales *(Brunner).*

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DICTYOTA PRUINOSA, *Brunner* (Br. Mon., 201, fig. 58).

Size large. Brownish-green; head, pronotum, and the base of elytra and femora whitish. Lateral ridges of pronotum rough and scabrous. Width of elytra twice the length of pronotum, form lanceolate, apex acuminate; transverse veinlets of marginal area very close; radial branch forked in the middle. Fore coxæ with a small spine.

	Female.
Length of body	38 mm.
Length of pronotum	10 "
Length of elytra	65 "
Width of elytra	20 "
Length of hind femora	33 "
Length of ovipositor	4 "

Habitat.—New Holland; Auckland, New Zealand *(Brunner)*.

Size and the whitish dust covering it give the species the aspect of *Stilpnochlora*, a Brazilian and West Indian genus of the group STEIRODONTIA, otherwise far removed.

DICTYOTA ELDERI, *spec. nov.*

Size moderate. Pale-green. Head, pronotum (except hind-margin and posterior angles of deflexed lobes, which are green), all the legs, base of elytra, abdomen, and the under side of the thorax creamy or testaceous-white. Disk of pronotum equally wide in front and behind, lobes with three furrows, all rough with minute pits. Elytra lanceolate, broadest at or slightly beyond the middle, apex rounded; transverse veinlets in marginal area moderately crowded, in parts considerably reticulate; ulnar vein brown; radial veins much separated at the apex, the posterior terminating in the apex; first radial branch forked beyond the middle, and succeeded by two simple ones. Hind femora slender, subterete. Hind tibiæ almost triangular, spines below small to minute.

	Female.
Length of body	30 mm.
Length of pronotum	6·5 "
Length of elytra	40 "
Width of elytra	10 "
Length of hind femora	30 "
Length of hind tibiæ	21 "
Length of ovipositor	3 "

Habitat.—Mount Squires, Central Western Australia, where the only specimen extant was captured by Mr. R. Helms, the botanist to the Elder Exploring Expedition, in August, 1891. It has been named in honour of the generous promoter of the expedition—Sir Thomas Elder—at whose sole expense it has been con-

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ducted, and who has greatly benefited the cause of geographical science and natural history during his life.

The species is allied to *D. pruinosa*, but differs in size, colour, proportions, the branches of the radial vein, its termination in the apex, &c.

Genus POLICHNE, *Stäl.* (Br. Mon. 22, 202).

Front prominent, elongate. Eyes very oblong. Elytra linear, narrowed. Deflexed lobes of pronotum longer than wide, with the hind margin much rounded. Hind margin of meso- and meta-sternum truncate. Base of hind femora not dilated, wholly unarmed.

The genus has the aspect of *Tylopsis*, an Old-World genus forming a monotypic group, on account of its long forehead, the long narrow lobes of the pronotum and narrow elytra, but its other characteristics place it among the EPHIPPITHYTÆ.

POLICHNE PARVICAUDA, *Stäl.* (ibid, fig. 59).

Pale-green or testaceous. Front white. Ridges of pronotum reddish.

	Male.	Female.
Length of body	15 mm.	18 mm.
Length of pronotum ...	4 "	4 "
Length of elytra	29 "	30 "
Width of elytra	4 "	4 "
Length of hind femora ...	20 "	22 "
Length of ovipositor ...	—	3 "

Habitat.—Mount Lofty Range, Kangaroo Island, Tintinarra (S.E.), South Australia; Dimboola, Caromby, (N.W.) Victoria *(Tepper)*; Sydney, New South Wales; North Australia; Lord Howe's Island *(Brunner)*.

The species varies considerably in colour, viz., from bright-green to pale-testaceous, apparently due to its surroundings or the food taken, for among the green grass no pale specimens, nor among the dry later in season any green ones, appear to be taken. The dark-brown or purplish bordering of the pronotum is, however, constant. The individuals, although never numerous, are not rare in grassy scrublands and fields from January to March. There are some ten specimens in the collection at the Adelaide Museum, six of which are green, the others pale, both comprising both sexes.

POLICHNE FERRUGINEA, *spec. nov.*

Size somewhat smaller than the preceding. Ferruginous. Face, pectus, and femora rather pale. Meso- and meta-notum testaceous. Elytra very narrow, rounded at apex, posterior radial vein forked at apex, both branches curved and terminatin

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in the hind margin ; transverse veinlets much raised, oblique or at right angles, crowded in ulnar area except at base. Veins and veinlets of the wings ferruginous. Cerci straight, divergent. Supra-anal lamina deeply emarginate. Ovipositor rather long, slightly shorter than the valves.

	Female.
Length of body	16 mm.
Length of pronotum	4 "
Length of elytra	30 "
Width of elytra	3 "
Length of hind femora	21 "
Length of ovipositor	3 "

Habitat.—Mount Lofty Range, South Australia.

The species is described from a single specimen obtained by Mr. E. Guest at Balhannah, but appears to be sufficiently distinct to merit specific rank. It has to be mentioned, that among the individuals placed under *P. parvicauda* by the author, there is a testaceous form with short elytra, comparatively broad, and more rounded at the apex, than those of the green ones. These *may* ultimately prove to form a separate species.

POLICHNE BREVIPES, *Brunner* (Mon. Add. 99).

Size small. Eyes large, globose. Deflexed lobes of pronotum equally high and long, rounded below. Elytra green, tympanal area of male with a shining black spot. Hind femora scarcely exceeding the elytra one and a-half times, minutely spined below.

	Male.
Length of body	16 mm.
Length of pronotum	4·5 "
Length of elytra	31 "
Length of hind femora	16 "

Habitat.—Peak Downs, Queensland.

POLICHNE LONGIPES, *Brunner* (ibid).

Size large. Pronotum very short, deflexed lobes somewhat higher than long. Fore femora brownish below, with some black spinelets. Hind femora exceeding the elytra two or three times, spined distantly below.

	Female.
Length of body	20 mm.
Length of pronotum	4·5 "
Length of elytra	33 "
Length of hind femora	24 "

Habitat.—Rockhampton, Queensland.

POLICHNE ARGENTATA, *Brunner* (ibid).

Green. Size small. Fastigium of vertex rather broad, sulcate.

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Deflexed lobes of pronotum with a silvery white margin. Marginal area of elytra black-reticulate, with irregular ivory-white veinlets; margin hyaline.

	Male.	Female.
Length of body	17 mm.	17 mm.
Length of pronotum ...	3 "	3·6 "
Length of elytra ...	21 "	24 "
Length of hind femora ...	16·5 "	20 "

Habitat.—Peak Downs, Queensland.

POLICHNE SPINULOSA, *Brunner* (ibid, 101).

Size large. Eyes oblong. Fore and middle femora spined along the whole external margin, hind femora in the middle alone.

	Female.
Length of body	22 mm.
Length of pronotum	5 "
Length of elytra	32 "
Length of hind femora	25 "

Habitat.—Rockhampton, Queensland.

Genus PARACAEDICIA, *Brunner* (Mon. Add. 10, 101, fig. 17).

Resembles CAEDICIA, but the fore tibiæ are terete or sulcate above, and quite smooth, also with conchate foramina in front and open ones behind. Meso- and meta-sternal lobes triangular.

This genus contains New Guinea and Sunda Island species, and forms the connection between the Ephippithytæ and Phlaruocentra groups, the latter being of African habitat. They are large insects, with large broad elytra.

PARACAEDICIA TIBIALIS, *Brunner* (ibid).

Elytra one-coloured, lanceolate, first radial branch forked long before the middle, transverse veinlets irregularly reticulate, radial vein emitting 3 or 4 branches into the hindmargin besides the first one. Fore tibiæ above at the base and the hind ones below wholly black.

	Female.
Length of body	36 mm.
Length of pronotum	8·2 "
Length of elytra	50 "
Width of elytra	13 "
Length of hind femora...	27 "
Length of ovipositor	2 "

Habitat.—Key Island.

PARACAEDICIA RARORAMOSA, *Brunner* (ibid).

Fore tibiæ not black, hind ones black above. Two radial branchlets besides the first.

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	Female.
Length of body	33 mm.
Length of pronotum	9 "
Length of elytra	54 "
Width of elytra	15 "
Length of hind femora...	30 "
Length of ovipositor	3·5 "

Habitat.—Halmahera (?!) Island.

PARACAEDICIA OBESA, *Brunner* (ibid).

Fore and hind tibiæ uniformly green Disk of pronotum almost round, deflexed lobes roundly inserted. Hind femora towards apex sparsely spined. Anal segments of male with two horns. Cerci simple.

	Male.	Female.	Var. minor male
Length of body ...	23 mm.	30 mm.	21 mm.
Length of pronotum	6 "	7·8 "	5·2 "
Length of elytra ...	39 "	47 "	36 "
Width of elytra ...	9 "	11·5 "	7·3 "
Length of hind femora	21 "	24·5 "	17·5 "

Habitat.—New Guinea, Easter Islands.

PARACAEDICIA SPINOSA, *Brunner* (ibid, 103).

Anal segment of male truncate. Cerci with a long spine internally.

	Male
Length of body	22 mm.
Length of pronotum	6 "
Length of elytra...	36 "
Width of elytra	7 "
Length of hind femora	22 "

Habitat.—Aru Islands.

PARACAEDICIA SERRATA, *Brunner* (Mon. Add. 103).

Hind femora below densely serrate for the whole length. Fore and middle tibiæ flattened.

	Female.
Length of body	34 mm.
Length of pronotum	8 "
Length of elytra	50 "
Width of elytra	14 "
Length of hind femora	26 "
Length of ovipositor	2 "

Habitat.—New Guinea.

PARACAEDICIA PLANICOLLIS, *Brunner* (ibid, 104).

Disk of pronotum flat, deflexed lobes angularly inserted,

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equally long and high. First radial branch forked angularly at the base. Fore femora smooth below, hind ones with 12-15 spinelets.

	Female.
Length of body	21 mm.
Length of pronotum	6 "
Length of elytra	40 "
Width of elytra	10 "
Length of hind femora	24 "

Habitat.—Uncertain.

PARACAEDICIA NIGROPUNCTATA, *Brunner* (ibid).

Elytra dotted all over with small, distant, black spots; they scarcely exceed the length of the pronotum in width.

	Female.
Length of body...	23 mm.
Length of pronotum	5·5 "
Length of elytra	46 "
Width of elytra	7·5 "
Length of hind femora	23·2 "
Length of ovipositor	2 "

Habitat.—New Guinea.

PARACAEDICIA VERRUCOSA, *Brunner* (ibid).

Elytra with callous white dots accompanying in series the radial veins, first radial branch forked in the middle.

	Male.
Length of body	25–28 mm.
Length of pronotum	7–7·8 "
Length of elytra	42–48 "
Width of elytra	11–12 "
Length of hind femora	24–27 "

Habitat.—Aru Islands.

F. GROUP TAENIOMENÆ (Br. Mon. 22, 203).

Ovipositor as long or longer than the pronotum, its margin serrulate or crenulate near the apex, rarely smooth. Subgenital lamina of male with free styles, or without them. Fore and middle tibiæ sulcate above and mostly spined along the external margin. (These characters also apply to several other but non-Australian groups.) Fore tibiæ spined above, but the apical spine is absent. Elytra with the frontal margin dense and ivory-white. Subgenital lamina of male with articulately-inserted styles. Ovipositor much longer than the pronotum, gradually curved, acuminate, and with the disk bright.

Restricted to Australia.

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Genus TAENIOMENA, *Brunner* (ibid).

Synonym, *Tinzeda*, part, Walker (Brit. Mus. Cat.)

Hind femora unarmed below. Deflexed lobes of pronotum longer than wide, lower margin nearly straight. Ovipositor distinctly serrulate.

Besides these, the principal distinctions are the narrow pointed elytra, with white stripes; the long slender legs, and the long attenuated ovipositor.

TAENIOMENA ALBOSIGNATA, *Brunner* (ibid, 204, fig. 60).

(Tinzeda eburnina, pars. ?, Walker).

Yellowish-green. Face whitish; a bright-white line in the middle of the pronotum, along the lower margin of the deflexed lobes, along the costal margin of the elytra, the interior side of the radial vein, and at the base of the tympanal area of the left elytron; the costal margin and the radial vein being also narrowly marked with a ferruginous border, and the base of the post-ulnar vein with a blackish streak. Deflexed lobes of pronotum much longer than high, hind angle rounded. Elytra very narrow, much acuminate, not extending beyond the ovipositor of female, but much longer in male. Radial veins distant at base and apex, contiguous intermediately. First radial branch not forked, following one or two simple. Anterior-ulnar vein straight, parallel with radial, long. Tympanal area of male with a stout plicate vein, which is much raised in left elytron, and joined to a semicircular continuation posteriorly. Wings slightly longer than elytra. Fore femora below unarmed, or with a few minute black spines. Subgenital lamina of male narrow, hindmargin roundly emarginate. Ovipositor long and broad, gradually acuminate, finely serrated towards apex for the third part of its length.

	Male.	Female.
Length of body	15 mm.	20 mm.
Length of pronotum ...	4 "	4 "
Length of elytra	33 "	26 "
Width of elytra	4·5 "	5 "
Length of hind femora ...	22 "	25 "
Length of ovipositor ...	—	12 "

Habitat.—Tintinarra, S.E. (January 7, 1887, *Tepper)*, Lucindale (December 24, 1891, *L. Campbell)*, Adelaide, South Australia; Sydney, New South Wales; Port Denison, Queensland *(Brunner)*.

This species is at once recognisable by the elytra of the female scarcely exceeding the ovipositor, and the roundly emarginate subgenital lamina. There are two females and one male in the Adelaide Museum. The ova are elongate-oval and almost flat, being 4 mm. long, 2 mm. wide, and brownish-grey.

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TAENIOMENA SOROR, *Brunner* (Br. Mon., 204).

Bright-green; similarly marked, but larger than the preceding. Deflexed lobes of pronotum much higher behind the middle. Elytra in both sexes much longer than hind femora, without the border of dark dots along the radial white line. Fore femora distinctly spined (3-5). Subgenital lamina very elongate, hind margin cleft. Ovipositor not much curved, very flat, very slightly narrowed, toward apex serrulate-dentate, brown, the remainder pale- to dark-green.

	Male.	Female.
Length of body	16 mm.	20 mm.
Length of pronotum ...	5 "	5–6 "
Length of elytra	36 "	31 "
Width of elytra	5 "	5 "
Length of hind femora ...	26 "	26 "
Length of ovipositor ...	—	10–12 "

Habitat.—Mount Lofty Range, near Adelaide (two females one male), Roseworthy scrub (one male), South Australia.

The species is readily recognizable by the sub-triangular form of the deflexed lobes of the pronotum (which are much wider than in *T. albosignata*), and the elytra extending considerably beyond the hind femora. Both are distinguished from all other described species by the long slightly-curved ovipositor. The leaves of *Bursaria spinosa* appear to supply the food of *T. soror*, all the specimens were found on those bushes.

One of the males placed in this species has the anterior vein furnished with three distinct branches, and the subgenital lamina deeply cleft, although otherwise resembling the other. In the absence of more material it was not thought advisable to form another species.

TAENIOMENA SORORIDES, *spec. nov.*

Pale-green to testaceous, marked with ivory stripes like *T. albosignata*, the stripe of the pronotum extending triangularly over the head to the vertex of the fastigium, and those of the marginal and radial areas (along the posterior border) are marked more or less distinctly by irregular, minute, black or dusky dots. Deflexed lobes of pronotum narrow, oblique, as high or higher than long, and highest at or slightly beyond the middle, lower margin sub-semicircularly rounded. Elytra narrowed from near the base. Plicate vein of the tympanal area of male prominent and oblique on left elytron. Subgenital lamina with base of emargination cleft, apices incurved. Ovipositor shorter and more incurved than in *T. soror*, finely and closely dentate at and near apex.

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	Male.	Female.
Length of body ...	13 mm.	17 mm.
Length of pronotum	4 "	4·5 "
Length of elytra ...	30–39 "	32–34 "
Width of elytra ...	3 "	3 "
Length of hind femora	20–26 "	23 "
Length of ovipositor...	—	7–9 "

Habitat.—Mannum, Leigh's Creek, Western Plains, Port Pirie Parallana and Adelaide (?), South Australia.

This species is distinguished from others by the shorter more curved ovipositor and the high, narrow, oblique lobes of the pronotum. There are four males and as many females in the collection, all more or less bleached and two totally so through immersion in alcohol, the colour is therefore uncertain, the line of blackish dots along the radial ivory-line is, however, quite constant. As the specimens have been gathered from such distant localities, the matching of the sexes is not quite beyond a doubt.

TAENIOMENA LOBATA, *Brunner* (Br. Mon., 205).

Pale-testaceous. Front and sides of face, base of antennæ, middle line and lower half of lobes of pronotum, broad border of marginal area, underside of pectus, and the thick part of hind femora almost white; lateral border of pronotum, a short streak near base of anterior radial vein, post-ulnar vein from tympanal area along nearly the entire length of hindmargin of elytra, the branch at the plicate vein, and a streak on the upper side of the hind femora are blackish. Vertex of fastigium much pointed, and beak-like produced. Bases of antennæ very stout and subcontiguous with the fastigium. Disk of pronotum more or less flat, the deflexed lobes small, narrow, the hind angle produced as a long keeled lobelet (keel blackish). Elytra with radial and ulnar veins very remote at the bases. Tympanal field of male short, plicate vein in both elytra not much raised. All femora unarmed. Cerci of male long semicircularly incurved. Subgenital lamina semicircularly emarginate, nearly as long as the cerci. Ovipositor much longer than pronotum, semicircularly-incurved, flat, broad, acuminate, shining, apex blackish or brown, both margins near apex serrulate or dentate (smooth in the nymph-stage).

	Male.	Female.
Length of body ...	... 11 mm.	13 mm.
Length of pronotum	... 3 "	3 "
Length of elytra ...	... 24 "	30 "
Width of elytra ...	... 3 "	4 "
Length of hind femora	... — "	24 "
Length of hind tibiæ	... — "	25 "
Length of ovipositor	... — "	5–6 "

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Habitat.—Tanunda, Riverton, Mount Bryan, South Australia; Coromby, N.W. Victoria *(Tepper)*; New South Wales *(Brunner)*.

The species is distinguished from all the others by the upper angle of the posterior margin of the narrow lobes of the pronotum being produced into a keeled lobelet, and the pale colour; both of which characters and the general aspect are so abnormal for the genus, that the formation of a separate one for its reception and, perhaps, that of *T. minor*, mihi, might be permissable. The insects are not very rare, and live among the dry grass from November to January. There are one male (without hind femora) and three females (one a nymph) in the Adelaide Museum.

TAENIOMENA FRASERENSIS, *spec, nov.*

Moderately large. Head, base of antennæ, legs and underside of pectus pale-glaucous-white. Antennæ testaceous. Eyes brown. Disk and lobes of pronotum, also marginal area of elytra glaucous, remainder of latter olive-green. Abdomen above brownish-black, terminal segment whitish, underside, &c., brownish-testaceous. Palpi and tarsi green. Disk of pronotum almost flat, wider behind, deflexed lobes as high as long, lower margin semicircularly rounded, widest in the middle, white border nearly obsolete. Elytra widest at base, transverse venules very distinct, crowdedly reticulate in the marginal area; radial veins widely separate at base, then closely contiguous, and again separating considerably somewhat beyond the middle. White lines broad, the posterior bordering of dark-reddish or blackish dots, striæ very distinct; posterior margin entirely bordered with brown. Tympanal area green, short; plicate vein pale, straight, much raised (but not branched), shining. Fore femora with two or three spinelets, hind femora with five or six. Cerci semicircularly incurved, sharply acuminate, tips black. Subgenital lamina not as long as the cerci, posterior margin triangularly emarginate, apex of lobe acuminate.

	Male.
Length of body	20 mm.
Length of pronotum	5 "
Length of elytra	38 "
Width of elytra	5 "
Length of hind femora	23 "

Habitat.—Fraser Range, interior of Western Australia.

The remarkably bright colouring, the form of the lobes of the pronotum, the emargination of the subgenital lamina, and the venation of the elytra separate this species from the others. Some specimens of *T. sororoides*, mihi, from Parallana, in the far north of South Australia, resemble it in size and general aspect; but the form of the lobes is different, and the radial

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branch (in one instance) crosses the anterior-vulnar vein. The only specimen in the Adelaide Museum was taken by Mr. R. Helms, collector to the Elder Exploring Expedition, in November, 1891.

TAENIOMENA MINOR, *spec. nov.*

Grass-green, face paler. White lines along radial vein and the base of tympanal area wholly obsolete. Disk of pronotum somewhat concave, middle white line continued to vertex of fastigium. Deflexed lobes longer than high, wider behind, inferior margin nearly straight, with narrow white border. Elytra brownish at apex, medial-plicate vein of tympanal area strongly raised, almost transverse; shoulder-vein very marked; hindmargin of area sharply curved, brownish. Fore and middle femora and tibiæ almost unarmed; hind femora entirely so. Cerci of male incurved, subgenital lamina rather widely cleft, tips incurved. Ovipositor widest at base, gradually acuminate, much curved, near apex finely dentately serrate.

	Male.	Female.
Length of body	13 mm.	17 mm.
Length of pronotum ...	3·5 "	4 "
Length of elytra	30 "	28 "
Width of elytra	4 "	4 "
Length of hind femora ...	21 "	22 "
Length of ovipositor ...	—	9 "

Habitat.—Callington, South Australia (*Tepper*), feeding on *Acacia calamifolia*, November 25, 1887, and apparently limited to sandy scrublands.

This species differs from others by the total absence of the white line along the posterior radial vein, its slender form of body, and several other characters.

Genus ELEPHANTODETA, *Brunner* (Br. Mon., 22, 206).

(*Tinzeda*, pars., Walker).

Hind femora spined below. Deflexed lobes of pronotum equally high and long, lower margin rounded. Ovipositor broadest in the middle, the margins very minutely serrated.

Wholly restricted to Australia.

The genus resembles DICTYOTA, on account of the whitish dust covering the forepart, and TAENIOMENA, in the corneous bordering of the base of the elytra, also in the absence of the apical spine of the fore tibiæ (which is usually the last to disappear); but differs in the characters indicated above. The generic name refers to the *ivory-like* border of the elytra.

ELEPHANTODETA EBURNATA, *Brunner* (Br. Mon., 207, fig. 61).

Size large. Head and pronotum yellowish-green, frontal margin from the base bordered bright ferruginous, blackish-inclined at

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the base, marginal area milky-white at the base. Ovipositor about two and a-half times the length of the pronotum, base greenish, margins ferruginous.

	Female.
Length of body...	... 34 mm.
Length of pronotum	... 7–8 "
Length of elytra	... 47–51 "
Width of elytra	... 10 "
Length of hind femora... ...	... 30–32 "
engtb of ovipositor	... 17 "

Habitat.—Sydney, New South Wales; Cape York, Queensland; Lord Howe's Island *(Brunner)*.

ELEPHANTODETA FARINOSA, *Brunner* (ibid).

Size moderate. Head, pronotum, and base of femora whitish or glaucous-green. Disk of pronotum rounded, with a faint whitish or yellowish line in the middle. Elytra pale grassy- or olive-green, the frontal margin at the base of the marginal area hoary in the male, milky-white in the female, with a short dark streak on the inner edge at the shoulders. Abdomen of female banded alternately green and purplish-brown, the latter tint usually narrower than the former. Ovipositor green at base, remainder brown, apex darkest; broad, compressed, semicircularly curved, apex much elevated, finely dentate at the underside, total length about one and a half times that of the pronotum.

	Male.	Female. (Dried specimens.)
Length of body ...	15 mm.	20–23 mm.
Length of pronotum ...	5 "	5 "
Length of elytra ...	38 "	36–31 "
Width of elytra ...	6 "	7 "
Length of hind femora	20 "	21–24 "
Length of hind tibiæ...	23 "	23 "
Length of ovipositor ...	— "	8–9 "

Habitat.—Brighton *(Dreyssig)*, Mount Lofty Range, Murray Bridge *(Tepper)*, Morgan *(Evans)*, Teatree Gully *(Smith)*, Goolwa *(Zietz)*, Balaklava *(Lewis)*, Dowlingville *(Willis)*, South Australia; New Holland *(Brunner)*.

This species differs from the preceding one in smaller size, proportion of length of ovipositor to that of pronotum, the pale medial line of the latter, &c., and is widely distributed in the southern parts of South Australia, where the other appears to be absent. There are seven females and one male in the Museum collection, and it is a curious fact, that in three specimens of the former, the first radial branch is *forked* beyond the middle, in the right elytra, but simple in the left, while the other four specimens exhibit normal and symmetrical venation.

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G. Group PHANEROPTERÆ (Br. Mon., 23, 209).

Hind tibiæ spined above or unarmed, the apical present only at the external margin. Fastigium of vertex acuminate. Elytra linear or lanceolate, mostly longer than the wings. Fore and middle tibiæ smooth above, excepting the apical spine (characters also applying to numerous other groups, containing Old World species almost exclusively). Elytra very narrow, radial veins distinctly separated at the base. Subgenital lamina of male without styles, or, if present, extremely minute.

Genus PHANEROPTERA, *Serville* (Br. Mon., 23, 209, fig. 63).

Disk of pronotum almost flat, as are also the deflected lobes of the male. Elytra with the hindmargin straight or sub-rotundate. All femora unarmed below. Wings much longer than the elytra.

The 11 species of this genus inhabit Europe, Asia, Africa, some of the Malayan islands, and a single is recorded by Brunner from "North Australia;" whether rightly so or not must for the present remain doubtful until specimens have come to hand from there.

PHANEROPTERA SUBNOTATA, *Stäl* (ibid, 215).

Yellowish-green. Antennæ pale yellow at base, brownish beyond. Subgenital lamina longer than cerci of male, much attenuated, sub-tubular, apex emarginate and incised.

	Male.	Female.
Length of body	12 mm.	14 mm.
Length of pronotum ...	3 "	3·2 "
Length of elytra ...	14·5 "	17 "
Length of hind femora ...	14 "	16 "
Length of ovipositor ...	—	4·5 "

Habitat.—North Australia, Borneo, Singapore *(Brunner)*, Philippine Islands *(Stäl)*, Java, &c. *(Serville)*.

Genus AGNAPHA, *Brunner* (Mon. Add., 14, 108).

Resembles PHANEROPTERA in habit. Pronotum with the disk flat, deflexed lobes trapezoid in shape and higher than long. Elytra scarcely wider than the length of pronotum. Wings hardly exceeding the elytra. Fore femora spined below.

The genus is restricted to Oceanic islands.

AGNAPHA FUSCA, *Brunner* (ibid).

Brownish-ferruginous. Occiput with four black stripes; these are continued over the pronotum forming two discoidal ones and sometimes one along each of the lateral ridges. Elytra dull ferruginous with brown stripe. Wings smoky with darker tips.

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	Female.
Length of body...	20 mm.
Length of pronotum	4·2 "
Length of elytra	27 "
Width of elytra	4·5 "
Length of hind femora...	18 "
Length of ovipositor	7 "

Habitat.—Easter Island.

H. Group ANAULACOMERÆ (Br. Mon., 27, 277).

Fore and middle tibiæ terete, sometimes wholly unarmed, rarely sulcate, and if so the apical spine is either wanting, or if present the meso- and meta-sternal lobes are elongated. (Characters in common with numerous other groups.) Frontal fastigium acuminate or obtuse, not laminately produced (excepting some species of the ANAULACOMERÆ). Fore femora—sometimes also the middle ones—always terete below, hind ones flattened near the apex. Subgenital lamina of male without styles. Ovipositor mostly longer than pronotum, slightly curved, acuminate, and very bright. (Characters including *Ctenophlebiæ*). Elytra subpellucid, radial branch forked. Deflexed lobes of pronotum either roundly or obtuse-angularly inserted.

This group contains four genera, of one of which two species inhabit some of the Pacific Islands and one Australia (as far as known); otherwise it is essentially South American.

Genus AULACOMERA, *Stäl* (ibid, fig. 85).

Disk of pronotum rather flat, without elevated lines.

Thirty species, mostly American; but some also from India, &c.

AULACOMERA INSULARIS, *Stäl* (ibid, 295).

Olive-green. Pronotum and legs uniformly green; deflexed lobes equally long and high. Elytra rather broad, first radial branch forked in the middle. Pronotum longer than the face. Ovipositor not much longer than the pronotum. Size small.

	Male.
Length of body...	18 mm.
Length of pronotum	5 "
Length of elytra	28 "
Width of elytra	7 "
Length of hind femora	17 "
Length of ovipositor	6·8 "

Habitat.—Samoa Islands *(Stäl).*

AULACOMERA INCERTA, *Brunner* (Br. Mon., 295, fig. 85*a*, *c*).

Olive. Pronotum flat, lobes equally long and high, roundly

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inserted. Elytra linear. Ovipositor one-half longer than pronotum Size large.

	Male.	Female.
Length of body	18 mm.	21 mm.
Length of pronotum ...	5·5 "	5·2 "
Length of elytra ...	32 "	35 "
Width of elytra ...	6 "	7 "
Length of hind femora ...	19 "	20 "
Length of ovipositor ...	—	8·5 "

Habitat.—Tongatabu; Fiji *(Brunner).*

AULACOMERA ACUMINATA, *Brunner* (Mon. Add., 148).

Size small. Pronotum with deflexed lobes longer than high. Elytra with hindmargin rounded, apex acuminate, tympanal area and sometimes the whole hindmargin brownish, first radial branch emitted much before the middle of vein, and forked towards its apex. Anal segment of male truncate, cerci long, incurved, subgenital lamina short, broad, triangularly emarginate.

	Male.
Length of body	15 mm.
Length of pronotum	4·5 "
Length of elytra	22 "
Width of elytra	6 "
Length of hind femora	17·5 "

Habitat.—Queensland.

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Narrative of an Exploring Tour Across Melville Island, with Notes on its Botany.

By Maurice Holtze, F.L.S.

[Read June 7, 1892].

In October, 1887, an exploring party left Port Darwin for Melville Island, situated about 40 miles to the north of Port Darwin. It was organized by the Government Resident, the Hon. J. L. Parsons, with the view of exploring the interior of the island, of which, owing to the warlike and uncompromising attitude of its natives, so very little as yet is known. The party consisted of 11 Europeans, five Chinese carriers, and six natives of the mainland, and was under the leadership of a bushman of great experience, Mr. P. Saunders. The aboriginals were taken as scouts, and to assist in night-watching, and their intense fear of the wild inhabitants of the island made them most reliable sentinels. There is an old legend amongst the natives of the mainland that raids had been made in olden times by the savage inhabitants of Melville Island upon those of the mainland, and it was with considerable trouble that these six natives were induced to accompany us.

The party arrived late in the afternoon of the 7th October opposite two small creeks about ten miles north-east from Cape Gambier, where our leader intended to land; the strong tidal influence of Clarence Straits drifted our vessel, however, during the night about 12 miles further to the east, where we landed the next morning on a fine sandy beach. From here we had to cut our way through a dense dry jungle about a mile in width, after which we came to a long mangrove flat, and altered our course to north-north-west. About a mile further we came to a chain of billabongs with plenty of water, which, however, was strongly polluted by buffalos. This creek we followed for about a quarter of a mile, and camped then for the day on an open place, so as to arrange everything for an early start next morning.

During the afternoon a lubra passed our camp, in the distance, who ran away yelling with fright on catching sight of us. Shortly after a native appeared, who harangued us from a distance and evidently ordered us off the island. As I wished to establish some sort of intercourse with the inhabitants, and as he was unarmed and accompanied by a lubra, which showed that he had no intent to attack just then, I advanced alone on him, bearing

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in my right hand the universal peace-token of all primitive tribes—a green bough—while my left was shown with the open palm, to prove myself to be unarmed, although I must confess that my revolver was loosened in its pouch and ready for action, and my eyes on the alert. I was allowed to approach him within about ten yards, when he commenced to retreat; but he stopped when I stopped, showing his will to keep me at a distance. He was a strong well-made man, completely nude, while his lubra wore an apology for a bark apron. He made me understand by gesticulations that we should leave the island at once, upon which I did my best to show him we had come as friends, and would leave the island on the opposite coast. I after this offered him a handkerchief, which he took from a bush where I had to put it. A second handkerchief was then demanded for his lubra, and transferred to her in the same way, after which we parted amicably.

The afternoon passed quietly, the packs being adjusted amongst our carriers—each man to carry about half hundredweight, his blanket, and a waterbottle, while each European was to carry his rifle, revolver and ammunition, blanket, mosquito-net, and a water-bottle. Our stores consisted of rice, biscuits, tinned meat, tea, and sugar. A bottle of whisky, together with a few medicines, lint, and bandages, and some rockets for signalling, completed our outfit. During the first watch, about half-past seven, several natives, accompanied by lubras, were heard around the camp. A few shots being fired in the air by the leader's orders, they retired precipitately under discordant screaming, and we were no more disturbed during the night. The next morning we started early, going north for about two miles over a fairly-grassed country, showing signs of being visited by buffalos. At two miles and a-half we reached the summit of the coast range, about 200 feet above the level of the sea, composed of ironstone conglomerate, sparsely timbered with *Eucalyptus*, *Grevillea*, *Acacia*, interspersed with *Bombax*, *Erythrophlæum*, *Metrosideros*. Three miles further on a small permanent creek, with good water running eastward, was crossed, and about three miles further on another creek running north was met.

From this point the country rises gradually and is intersected by low ironstone ridges. Continuing our course for another mile and a-half we camped for dinner, and after a short rest, our leader and Mr. Hingston, the surveyor, went a short distance in an easterly direction, hoping to find a creek to fill the water-bags. In this they succeeded at a distance of about 200 yards, but while returning to the camp they were attacked by natives, who had followed us evidently at a distance, and a spear pierced the leader's arm. At the sound of their firearms the party hurried

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to their assistance, and pursued the blacks for some distance, who, however, were soon lost in the dense growth on the other side of the creek. The spear being extracted, and the wound dressed, we continued in the same direction, and reached, after about two miles, a tidal creek about 20 yards wide. Luckily for us it was low tide, and we were therefore able to cross easily, the banks showing that at high tide there was more than twelve feet of water. From here we went for about four miles over open forest-country, and camped on the edge of a flat, on a short allowance of water. After the camp was formed, the leader, myself, and two other members of the party, accompanied by two of the blacks, followed the flat down in a north-easterly direction for about a mile, when we discovered a clear spring in a pandanus thicket, which we named "The Rose." The blacks soon brought the coolies down, and all the water-bags were replenished. After a quiet night the water-bottles were filled again, and we started on a north-north-westerly course for about two miles when we came to a large creek fringed with mangroves. Following this for about three-fourths of a mile in a south-south-westerly direction, a narrow part of the creek was reached, where a couple of trees were felled, over which we crossed to the other side. A quarter of a mile westerly brought us to a salt-water river about 50 yards wide, which forced us to alter our course to north-west. We travelled in this direction for about three miles over a high sandy flat, and camped for dinner with a short allowance of water.

After a rest we continued our trip in a north-easterly direction, over ridges covered with ironstone boulders, the intense heat and scarcity of water making this sort of travelling most unpleasant. After going about three miles we struck a pandanus-flat, and following this down in a north-westerly direction for about a mile we discovered a beautiful strong-running freshwater stream, which was named the "Bath." A swim in the cool water and a copious drink revived the party wonderfully, and after filling our waterbags we pushed on for a couple of miles more, and camped for the night on a high ironstone ridge.

On the 11th October a paperbark swamp was encountered shortly after starting, which forced us to alter our course to north-east, and after a mile's travel the sea was at last sighted. A large swamp, however, blocked our way; and here the first plant new to me—*Lycopodium cernuum*—was found. There was no chance to avoid this swamp, so we had to cross it, travelling for about a quarter of a mile, sometimes up to our belts in black mud. The course was continued in a north-easterly direction for half a mile, when a large river, which was called the "Johnson," was seen running on our left, going east. Pushed on for about two miles to

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the south-south-west, following an open swamp; crossed, and camped for dinner.

After this a tramp of hardly a mile brought us to the south of Brenton Bay. As our destination was Lethbridge Bay, fifteen miles to the west, we pushed ahead on the sandy sea-beach till late in the afternoon, when we camped. Water was fortunately found in a sandy hollow after digging about three feet, and we passed the night undisturbed.

The next morning an early start was again made, and we expected to see the ship about 10 a.m. However, after a tramp of nine miles we encountered a large inlet of the sea not marked on the map, which was named "Robinson's Inlet," which stopped our further travel. A raft of dry wood and bushes was soon made, and four of our best swimmers placing their clothes and weapons on this raft, crossed over to the other side with instructions to signal the vessel. After a short while they returned, however, with a native canoe, which they had found, and which enabled those members of the party who were not good swimmers to cross to the other side. A tramp of about two miles brought the Bright-Red Cliffs in Lethbridge Bay in our view, and shortly after the s.s. Active was also seen awaiting our coming.

The country around Lethbridge Bay was dotted with signal-fires, and showed that the natives had watched the movements of the vessel round the coast, and intended evidently to oppose a landing on their island with all their might. While waiting on the beach for the Active's boats, the natives managed to crawl through the bush near enough to give us as a parting salute a shower of spears, which, however, although they fell into our midst, did no harm.

The most prominent feature botanically observed on Melville Island is the fact that no bamboos at all were met with, and the fact that the spears of the inhabitants, which were thrown at us, were made of thin mangrove stems and stringybark would almost prove their absence on the island. A botanical novelty which I would have liked very much to have taken with me was found in the shape of a *Livistona humilis* with four distinct branches.

The list of plants observed during the trip is far from complete, as the hurried way in which I had to make my observations enabled me only to see the more prominent plants, particularly trees, besides which, the season being so advanced most grasses and herbaceous plants were made already unrecognisable. No orchids whatever were observed, and, with the exception of the *Lycopodium cernuum*, no plant which I had not previously collected on the mainland.

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Enumeration of Plants observed on Melville Island.

Ranunculaceæ :—*Clematis glycinoides*, De Cand.
Nymphaeaceæ :—*Nymphaea stellata*, Willd.
Anonaceæ :—*Uvaria Holtzei*, F. v. M.; *Polyalthia Holtzeana*, F. v. M.
Myristiceæ :—*Myristica insipida*, R. Br.
Menispermeæ :—*Stephania hernandifolia*, Walpers.
Capparideæ :—*Capparis umbonata*, Lindl.
Flacourtieæ :—*Cochlospermum Fraseri*, Planch.
Pittosporeæ :—*Pittosporum melanospermum*, F. v. M.
Droseraceæ :—*Drosera petiolaris*, R. Br.
Guttiferæ :—*Calophyllum Soulattri*, Burmann.
Meliaceæ :—*Dysoxylum Schultzii*, C. De Cand; *Carapa Moluccensis*, Lamark.
Rutaceæ :—*Xanthoxylum parviflorum*, Benth.
Malvaceæ : — *Sida rhombifolia*, Linne; *Hibiscus tiliaceus*, Linne; *Hibiscus cannabinus*, Linne; *Thespesia populnea*, Solander; *Bombax Malabarica*, De Cand.
Sterculiaceæ :—*Sterculia quadrifida*, R. Br.; *Brachychiton paradoxus*, Schott; *Helicteres Isora*, Linne; *Melochia corchorifolia*, Linne; *Elaeocarpus Arnhemicus*, F. v. M.
Euphorbiaceæ : — *Petalostigma quadriloculare*, F. v. M.; *Hemicyclia lasiogyna*, F. v. M.; *Croton Verreauxii*, Baillon.
Urticaceæ :—*Tremna cannabina*, Loureiro; *Ficus scabra*, G. Forster; *F. glomerata*, Willdenow; *Antiaris macrophylla*, R. Br.
Casuarineæ :—*Casuarina equisetifolia*, R. and G. Forst.
Burseraceæ :—*Canarium Australianum*, F. v. M.; *Ganophyllum falcatum*, Blume.
Anacardiaceæ :—*Buchanania obovata*, Engler.
Amarantaceæ :—*Gomphrena canescens*, R. Br.; *Amaranthus leptostachyus*, Benth.
Leguminosæ :—*Jacksonia dilatata*, Benth.; *Psoralea Testariæ*, F. v. M.; *Indigofera hirsuta*, Linne; *Canavalia obtusifolia*, De Cand.; *Abrus precatorius*, Linne; *Pongamia glabra*, Ventenat; *Caesalpina Bonducella*, Fleming; *Peltophorum ferrugineum*, Benth.; *Erythrophlaeum Laboucherii*, F. v. M.; *Acacia praelongata*, F. v. M.; *A. drepranocarpa*, F. v. M.; *A. auriculiformis*, Cunning.; *A. latifolia*, Benth.; *Albizzia procera*, Benth.; *A. monilifera*, F. v. M.
Onagreæ :—*Jussieua suffruticosa*, Linne.
Salicarieæ :—*Pemphis acidula*, R. and G. Forst.
Rhizophoreæ :—*Rhizophora mucronata*, Lamark.; *Ceriops Candolleana*, Arnott.
Myrtaceæ :—*Verticordia Cunninghamii*, Schauer.; *Calycothrix microphylla*, A. Cunn.; *Melaleuca Leucadendra*, Linne.;

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M. symphyocarpa, F. v. M.; *Eucalyptus miniata*, A. Cunn.; *E. clavigera*, A. Cunning.; *E. alba*, Reinwardt.; *E. tetradonta*, F. v. M.; *Metrosideros paradoxa*, F. v. M.; *Eugenia Armstrongii*, Benth.; *E. Holtzeana*, F. v. M.; *Barringtonia acutangula*, Gaertner.; *Careya australis*, F. v. M.; *Sonneratia acida*, Linne fil.

MELASTOMACEÆ :—*Osbeckia Australiana*, Naudin.; *Melastoma Malabathricum*, Linne.

RHAMNACEÆ :—*Zizyphus Oenoplia*, Miller; *Alphitonia excelsa*, Reisseck.

VINIFERÆ :—*Vitis adnata*, Wallich; *V. acetosa*, F. v. M.

LEEACEÆ :—*Leea Brunoniana*, Clarke.

UMBELLIFERÆ :—*Didiscus villosus*, F. v. M.

OLACINEÆ :—*Ximenia Americana*, Linne.

LORANTHACEÆ :—*Loranthus longiflorus*, Desrous.

PROTEACEÆ :—*Persoonia falcata*, R. Br.; *Grevillea Chrysodendron*, R. Brown; *G. heliosperma*, R. Brown; *G. Dryandri*, R. Brown; *G. mimosoides*, R. Brown; *Hakea arborescens*, R. Brown; *Banksia dentata*, Linne fil.

RUBIACEÆ :—*Sarcocephalus cordatus*, Miquel; *Gardenia megasperma*, F. v. M.; *Ixora Dallachyana*, F. v. M.; *Timonius Rumphii*, De Cand.; *Guettarda speciosa*, Linne; *Morinda citrifolia*, Linne.

PASSIFLOREÆ :—*Modecca australis*, R. Brown.

CUCURBITACEÆ :—*Trichosanthes Holtzei*, F. v. M.; *Luffa foetida*, Cavanilles.

COMPOSITÆ :—*Pleurocarpaea denticulata*, Bentham; *Brachycome iberidifolia*, Bentham; *Vittadinia macrorrhiza*, A. Gray; *Helichrysum lucidum*, Henckel.

GOODENIACEÆ :—*Scaevola Koenigii*, Vahl.; *Goodenia Armitiana*, F. v. M.

GENTIANEÆ :—*Limnanthemum Moonii*, Thwaites.

LOGANIACEÆ :—*Strychnos lucida*, R. Brown.

MYRSINACEÆ :—*Aegiceras majus*, Gaertner.

SAPOTACEÆ :—*Mimusops parvifolia*, R. Brown.

EBENACEÆ :—*Diospyros cordifolia*, Roxburgh.

JASMINEÆ :—*Jasminum didymum*, G. Forster; *J. simplicifolium*, G. Forster.

APOCYNEÆ :—*Alstonia verticillosa*, F. v. M.; *Wrightia saligna*, F. v. M.; *Parsonia velutina*, R. Br.

ASCLEPIADEÆ : — *Sarcostemma australe*, R. Br.; *Marsdenia velutina*, R. Br.

CONVOLVULACEÆ :—*Ipomoea Turpethum*, R. Br.; *I. Pes Capræ*, Roth.; *I. graminea*, R. Br.; *Evolvulus linifolia*, Linne; *Cressa Cretica*, Linne.

SOLANACEÆ :—*Solanum viride*, Solander.

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SCROPHULARINÆ :—*Mimulus Uvedaliæ*, Benth.
LENTIBULARINÆ :—*Utricularia chrysantha*, R. Brown ; *U. cyanea*, R. Brown ; *U. leptoplectra*, F. v. M.; *U. Singeriana*.
BIGNONIACEÆ :—*Dolichandrone filiformis*, Seemann.
ACANTHACEÆ :—*Thunbergia fragrans*, J. Koenig ; *Acanthus ilicifolius*, Linne ; *Hypoestes floribunda*, R. Brown.
LABIATÆ :—*Coleus scutellarioides*, Benth.; *Pogostemon verticillatus*, Hasskarl ; *Anisomeles salvifolia*, R. Brown.
VERBENACEÆ :—*Clerodendrum floribundum*, R. Brown ; *C. Holtzei*, F. v. M.; *Gmelina macrophylla*, Benth ; *Vitex glabrata*, R. Brown ; *Avicennia officinalis*, Linne.
ASPERIFOLIÆ :—*Cordia subcordata*, Lamarck.
CYCADEÆ :—*Cycas media*, R. Brown.
TACCACEÆ :—*Tacca pinnatifida*, R. and G. Forster.
HEAMODORACEÆ :—*Haemodorum subvirens*, F. v. M.
DIOSCORIDEÆ :—*Dioscorea transversa*, R. Brown.
LILIACEÆ :—*Smilax australis*, R. Brown ; *Asparagus racemosus*, Willd. ; *Dracaena angustifolia*, Roxb.
PALMÆ :—*Livistona humilis*, R. Br.
PANDANEÆ :—*Pandanus odoratissimus*, Linne f.
AROIDEÆ :—*Amorphophallus variabilis*, Blume.
TYPHACEÆ :—*Typha angustifolia*, Linne.
PONTEDERIACEÆ :—*Monochoria cyanea*, F. v. M.
PHILHYDREÆ :—*Philhydrum lanuginosum*, Banks.
FLAGELLARIACEÆ :—*Flagellaria Indica*, Linne.
CYPERACEÆ :—*Cyperus decompositus*, F. v. M.
GRAMINEÆ :—*Panicum semialatum*, R. Brown ; *Setaria glauca*, Palisot ; *Spinifex longifolius*, R. Brown ; *Imperata arundinacea*, Cyrillo ; *Andropogon exaltatus*, R. Brown ; *A. contortus*, Linne ; *Arundo Roxburghii*, F. v. M.
LYCOPODINÆ :—*Lycopodium cernuum*, Linne.
FILICES :—*Lygodium scandens*, Swartz ; *Gleichenia flabellata*, R. Brown ; *Adiantum lunulatum*, Burmann ; *Cheilanthes vellea*, F. v. M. ; *Aspidium exaltatum*, Swartz ; *Polypodium phymatodes*, Linne ; *P. quercifolium*, Linne ; *Acrostichum scandens*, J. Smith ; *A. aureum*, Linne.

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EXPLANATIONS TO PLATE V.

Fig.

1. CYPRAEA PARALLELA, *Tate.* Slightly enlarged.

2-2a. CYPRAEA SCALENA, *Tate.* Dorsal and ventral aspects; very slightly enlarged.

3. CYPRAEA SUBSIDUA, *Tate.* Slightly enlarged.

3a-3b. VAR. Slightly enlarged.

4. CYPRAEA AMPULLACEA, *Tate.* Nat. size.

5. CYPRAEA SUBPYRULATA, *Tate.* Very slightly enlarged.

6. CYPRAEA TOXORHYNCHA, *Tate.* Nat. size.

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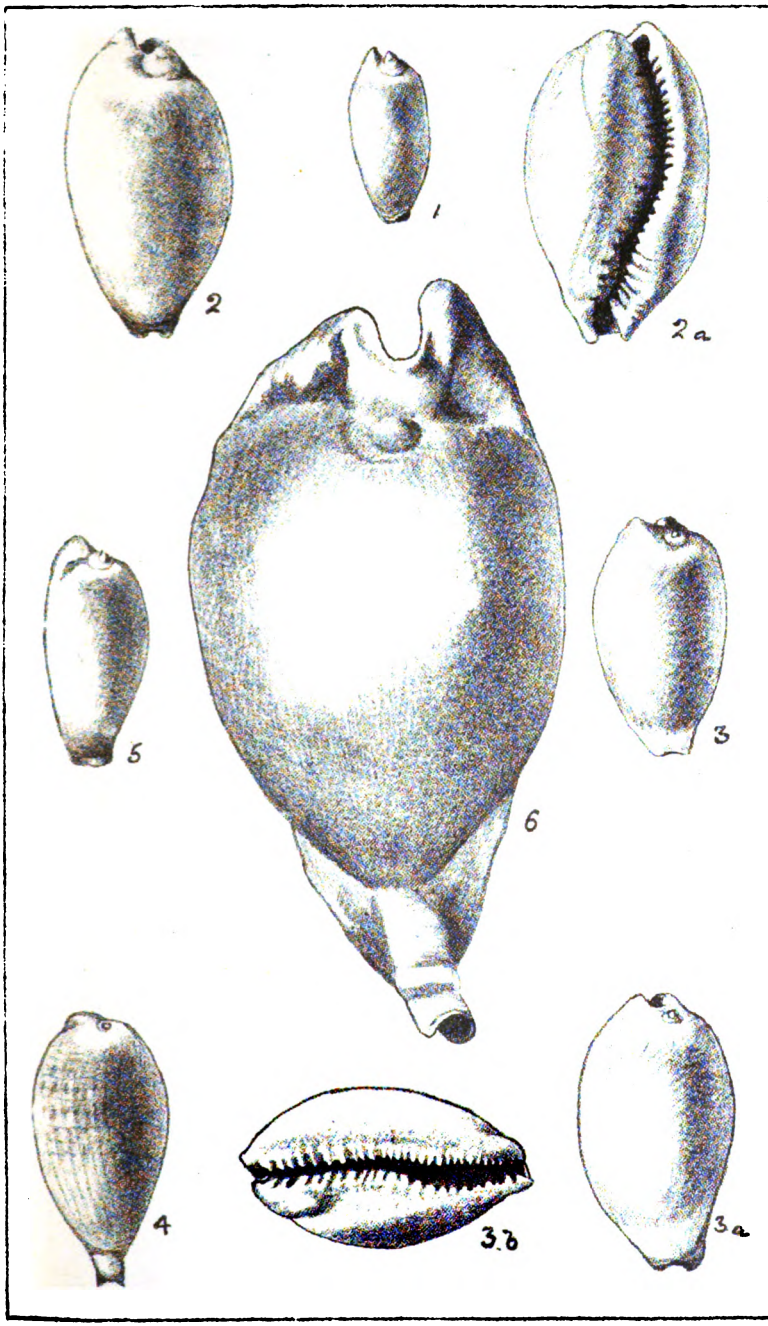

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EXPLANATIONS TO PLATE VI.

Fig.

1. CYPRAEA ARCHERI, *Ten.-Woods.* Nat. size.

2. CYPRAEA JONESIANA, *Tate.* Nat. size.

3. CYPRAEA BRACHYPYGA, *Tate.* Slightly enlarged.

4a-4b. CYPRAEA PYRULATA, *Tate.* Dorsal and ventral aspects; slightly enlarged.

4c. CYPRAEA PYRULATA, *var.*

5. CYPRAEA TOXORHYNCHA, *Tate.* Side view; nat. size.

6. CYPRAEA MURRAVIANA, *Tate.* Nat. size.

7-7a. CYPRAEA OVULATELLA, *Tate.* Dorsal and ventral aspects; slightly enlarged.

8. CYPRAEA AMYGDALINA, *Tate.* Nat. size.

9. CROSSEA SUBLABIATA, *Tate.* 2 x.

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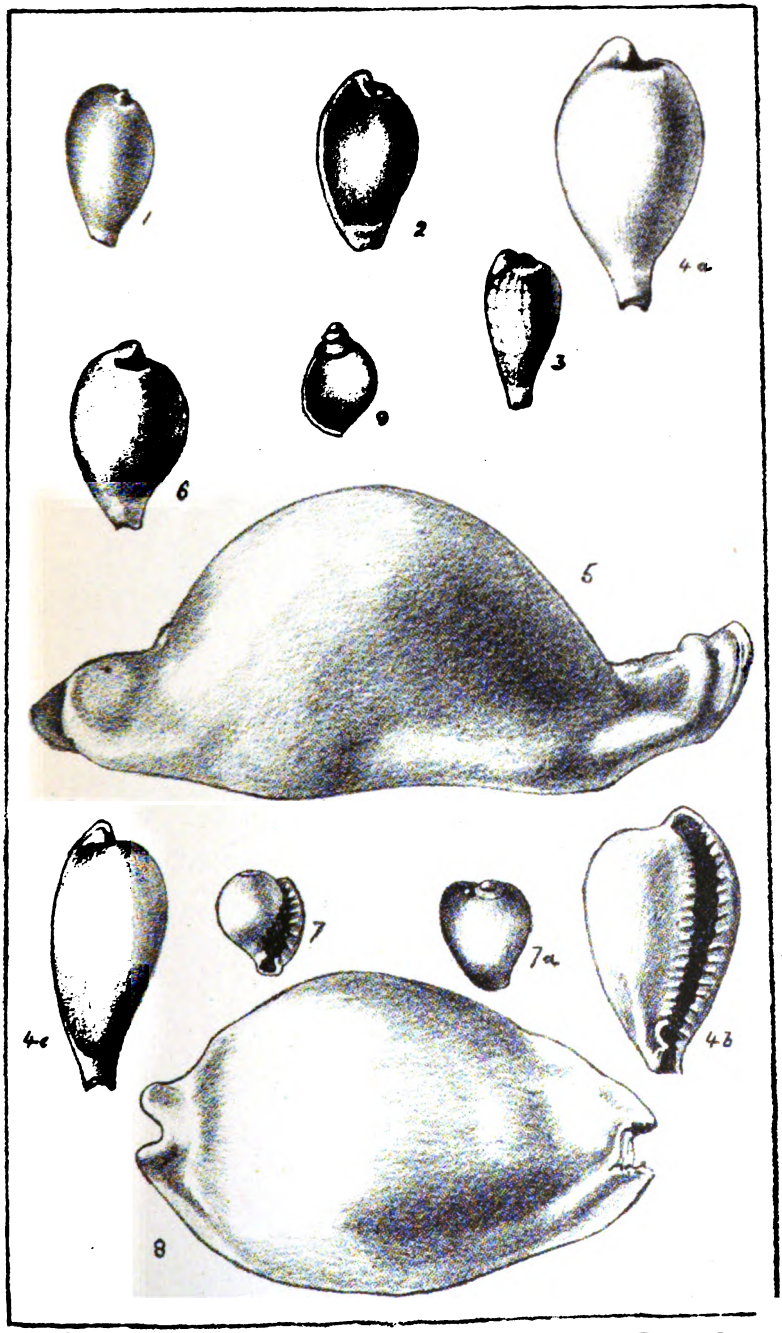

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EXPLANATIONS TO PLATE VII.

Fig.

1. CONUS CUSPIDATUS, *Tate*. Nat. size.

1a. ID. Embryo ; much enlarged.

2. CONUS MURRAVIANUS, *Tate*. Nat. size.

3. CONUS PTYCHODERMIS, *Tate*. Nat. size.

4. CONUS LIGATUS, *Tate*. Nat. size.

4a-4b. VAR. Nat. size.

5-5a. CONUS HETEROSPIRA, *Tate*. Nat. size.

6. CONUS RALPHII, *Ten.-Woods*. Nat. size.

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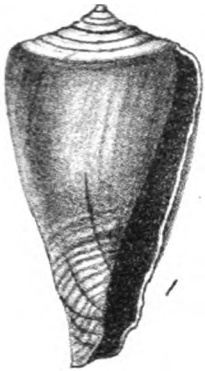

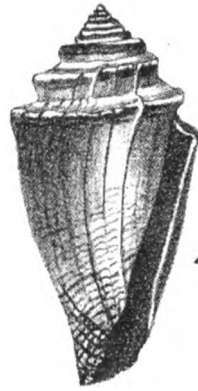

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EXPLANATIONS TO PLATE VIII.

Fig.

1. CONUS EXTENUATUS, *Tate*. Nat. size.

2. SCALARIA MICRORHYSA, *Tate*. 2 x.

3. CONUS HAMILTONENSIS, *Tate*. Nat. size.

4-4a. CROSSEA LAUTA, *Tate*. 4 x.

5. CYPRAEA SPHAERODOMA, *Tate*. Nat. size.

6-6a. CROSSEA PRINCEPS, *Tate*. 3 x.

7. CONUS ACROTHOLOIDES, *Tate*. 2 x.

8. CONUS COMPLICATUS, *Tate*. Slightly enlarged.

9. CONUS LIGATUS, *Tate*. Slightly enlarged.

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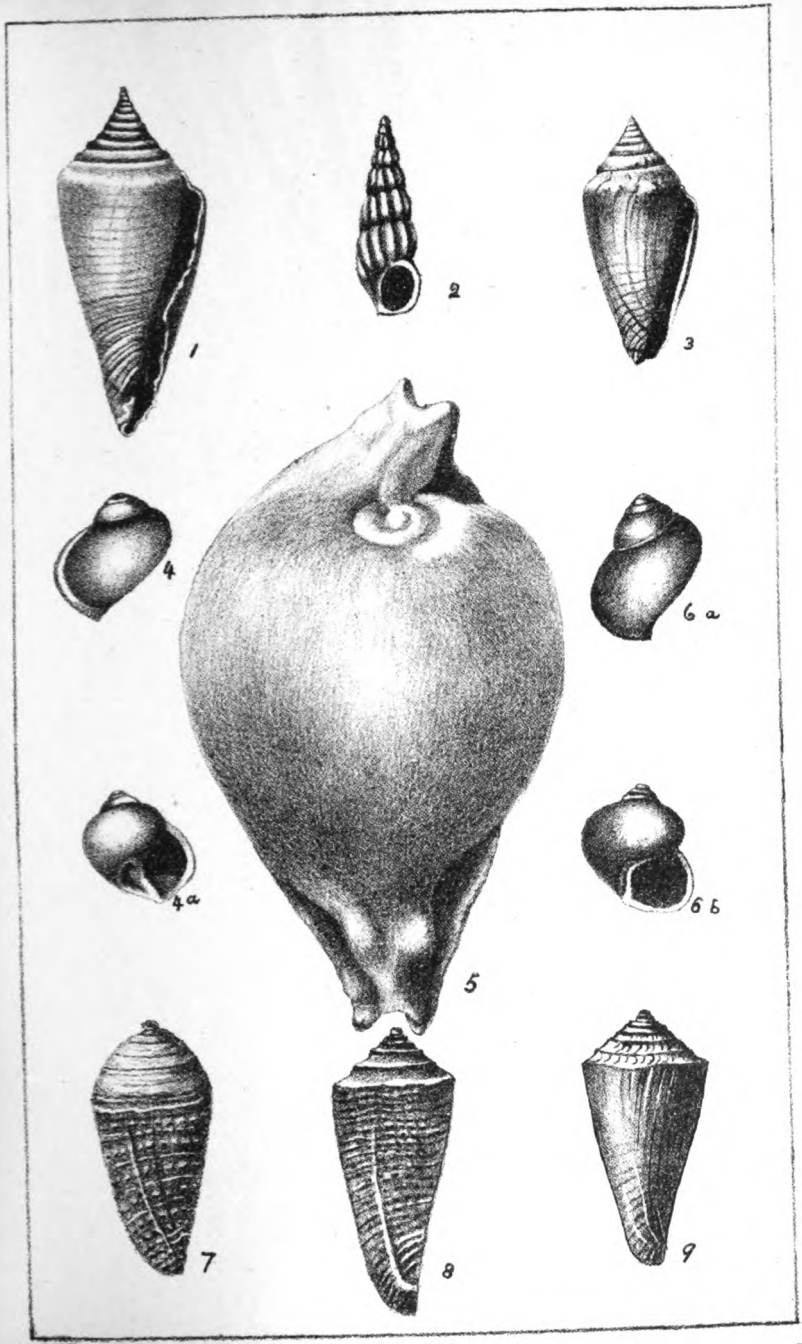

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EXPLANATIONS TO PLATE IX.

Fig.

1. CYPRAEA (CYPRAEIDIA) CLATHRATA, *sp. nov.* Nat. size and enlarged ornamentation. Eocene—Aldinga.

2. SCALARIA TRIPLICATA, *Tate.* Nat. size and enlarged ornamentation.

3-3a. SIMNIA EXIGUA, *Tate.* Dorsal and ventral aspects. 2 x.

4. CYPRAEA MULDERI, *sp. nov.* Slightly reduced. Eocene—Fyansford, near Geelong.

5-5a. TRIVIA ERUGATA, *Tate.* Ventral and dorsal aspects. 4 x.

6-6a. SEQUENZIA RADIALIS, *Tate.* Basal and lateral aspects. 6 x.

7. CONORBIS ATRACTOIDES, *Tate.* Slightly enlarged.

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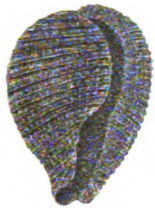

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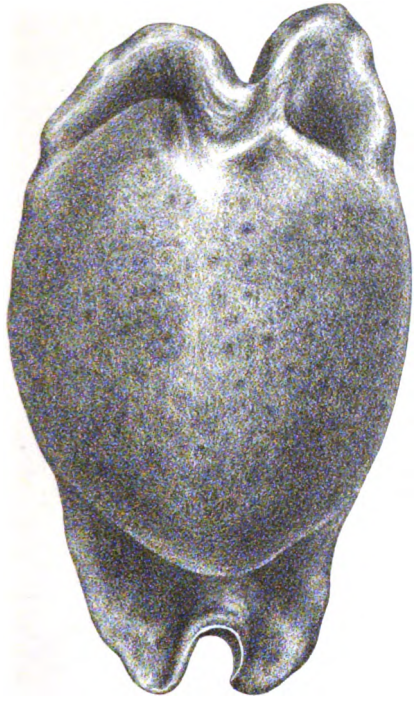

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Hussey & Gillingham Lith

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EXPLANATIONS TO PLATE X.

Fig.

1. SCALARIA INTERSTRIATA, *Tate*. 2 x.
2. SCALARIA ORYCTA, *Tate*. 2 x and magnified ornamentation.
3. SCALARIA GLYPHOSPIRA, *Tate*. 3 x and magnified ornamentation.
4. CYPRAEA DORSATA, *Tate*. Dorsal aspect, slightly reduced.
5. SCALARIA HAMILTONENSIS, *Tate*. 4 x.
6. SCALARIA INORNATA, *Tate*. 6 x.
7. SCALARIA ERITIMA, *Tate*. 2 x and enlarged ornamentation.
8. SCALARIA PRIONOTA, *Tate*. 3 x and magnified ornamentation.
9. SCALARIA TRANSENNA, *Tate*. Slightly enlarged and ornamentation.

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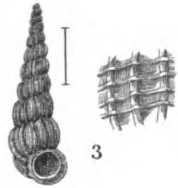

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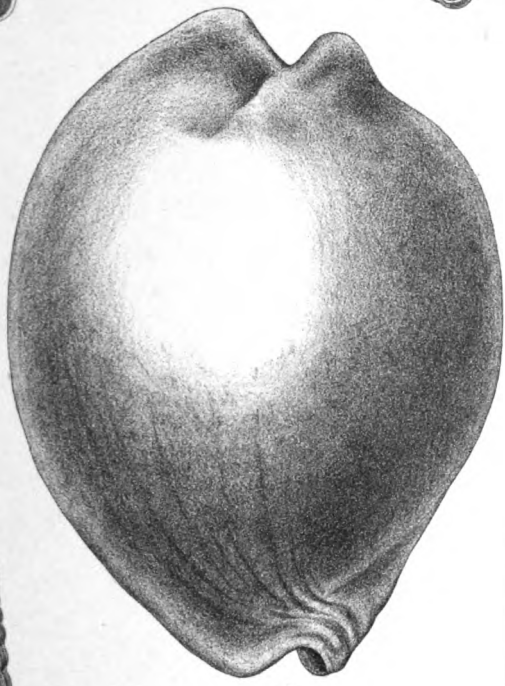

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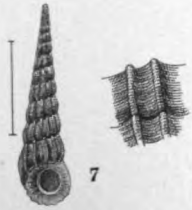

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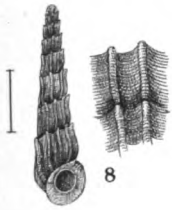

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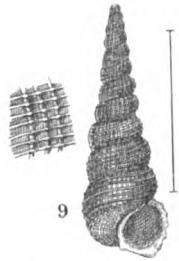

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Hussey & Gillingham Lith

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EXPLANATIONS TO PLATE XI.

Fig.

1. SCALARIA ECHINOPHORA, *Tate.* 2½ x.

2-2a. SCALARIA BASINODOSA, *Tate.* Ventral and dorsal aspects, 6 x.

3. SCALARIA BULBIFERA, *Tate.* 6 x.

4. SCALARIA FOLIOSA, *Tate.* Body-whorl, 3 x.

5. SCALARIA LOXOPLEURA, *Tate.* 2 x; and body-whorl, much enlarged.

6. CYPRAEA DORSATA, *Tate.* Lateral aspect; slightly reduced.

7. CONUS DENNANTI, *sp. nov.* (*C. pullulescens*, *var.*, Tate). Nat. size.

8. SCALARIA LAMPRA, *Tate.* 4 x.

9. CONUS PULLULESCENS, *Ten.-Woods.* Nat. size.

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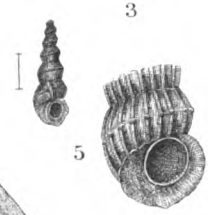

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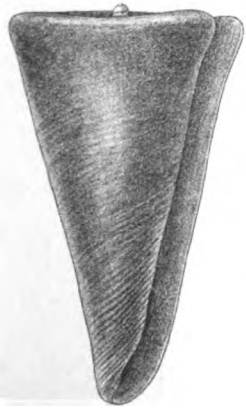

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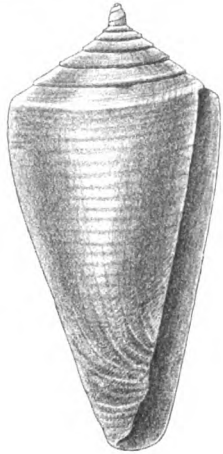

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H. B. lith.

HUSSEY & GILLINGHAM LTH.

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EXPLANATIONS TO PLATE XII.

Fig.

1. SCALARIA PLEIOPHYLLA, *Tate*. 2 x.
2. SCALARIA MARIÆ, *Tate*. Nat. size.
3. SCALARIA PACHYPLEURA, *Tate*. 3 x and apex magnified.
4. SCALARIA MUTICA, *Tate*. 5 x.
5. SCALARIA ESCHARIOIDES, *Tate*. 4 x and magnified ornamentation.
6. SCALARIA CYLINDRACEA, *Tate*. 5 x.
7. SCALARIA GONIOIDES, *Tate*. 7 x (nearly).
8. SCALARIA CREBRELAMELLATA, *Tate*. 3 x.
9. SCALARIA POLYNEMA, *Tate*. 2 x and magnified ornamentation.
10. SCALARIA (HEMIACIRSA) DOLICHA, *n. sp.* 4 x and apex magnified. Eocene—Schnapper Point.
11. TRICHOTROPIS ACCRESCENS, *Tate*. 2 x.
12. TRICHOTROPIS QUINQUELIRATA, *Tate*. 3½ x.

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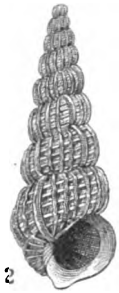

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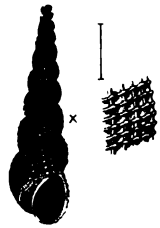

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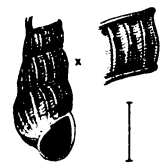

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EXPLANATIONS TO PLATE XIII.

Fig.

1. TRICHOTROPIS APICILIRATA, *Tate.* 4 x and magnified ornamentation.
2. TRICHOTROPIS INTERLINEATA, *Tate.* 3 x and magnified ornamentation.
3. TRICHOTROPIS SUBQUADRATA, *Tate.* 6 x and magnified ornamentation.
4. TRICHOTROPIS TABULATA, *Tate.* 5 x.
5. TRICHOTROPIS ANGULIFERA, *Tate.* 10 x.
6. TRICHOTROPIS TRIPLICATA, *Tate.* 10 x.
7. TRICHOTROPIS FENESTRATA, *Tate.* 10 x.
8. TRICHOTROPIS COSTATA, *Tate.* 7 x.
9. ERATO AUSTRALIS, *Tate.* 3 x.
10. 10a. ERATO MINOR, *Tate.* Ventral and dorsal aspects, 5 x.
11. ERATO ILLOTA, *Tate.* Dorsal aspect, 5 x.
12. ERATO PYRULATA, *Tate.* Ventral and dorsal aspects, 3 x.

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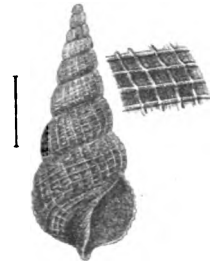

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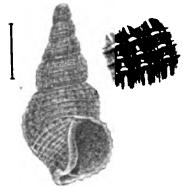

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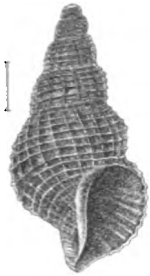

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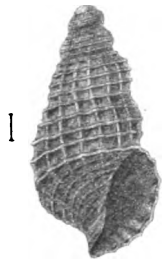

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TRANSACTIONS

OF THE

ROYAL SOCIETY of SOUTH AUSTRALIA.

VOL. XV., Part II.,

INCLUDING PROCEEDINGS AND REPORTS.

EDITED BY PROFESSOR RALPH TATE.

[With Two Plates.]

ISSUED DECEMBER, 1892.

Adelaide:

W. C. RIGBY, 74, KING WILLIAM STREET.

Parcels for transmission to the Royal Society of South Australia, from Europe and America, should be addressed "per W. C. Rigby, care Messrs. Thos. Meadows & Co., 35, Milk Street, Cheapside, London."

VARDON & PRITCHARD, PRINTERS, GRESHAM STREET.

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Some Habits and Customs of the Chingalee Tribe, Northern Territory, S.A.

By A. G. B. Ravenscroft.

(Communicated by E. C. Stirling, M.D.)

[Read July 5, 1892.]

Locality.—The Chingalee Tribe occupy a large area of country of which Charlotte Waters is the centre; extending northward 96 miles to Daly Waters; southwards 60 miles to Powell's Creek; eastwards 100 miles; and westwards 70 miles.

Water-supply.—These aboriginals are by no means solely dependent upon the creeks for their water-supply, as they have shallow wells in various parts of the scrub, 12 and 15 miles distant from the water-courses. One of these native wells is remarkable as regards its construction, being sunk vertically for eight feet, and then a drive was run for six feet. These natives do not appear to be particular as to the purity of their drinking water, and camp by preference at their wells, in which the water is generally more or less tainted, instead of at water-holes. Also the water contained in their wooden vessels often fairly stinks, owing to their habit of putting leaves in it to prevent its spilling, and then neglecting to remove them. This causes a fermentation to be set up, which renders the water quite unsuitable to a thirsty European. The water in the wells is generally of an inky colour, and gives the impression of being contaminated with sewage.

Religion.—The idea of a Supreme or any other Supernatural Being does not appear to exist. Neither is there any conception of a hereafter; for, when asked what becomes of them after death, the invariable reply is "all along same dingo." It may be stated, however, that amongst the Dawson blacks of Queensland there is current a kind of "Adam and Eve" story to the effect that long ago blacks of both sexes lived in the sky, who were let down on the earth to play during the day; and taken up again at sunset. On one occasion a blackfellow and his lubra were left behind, and after this the others never again visited the earth. From this pair the blacks of the Dawson River were said to be descended.

Customs.—Circumcision is generally practised. Two per cent. of the males have also the urethral canal laid open. This latter operation consists in making on the underside of the penis an incision into the canal extending from the base to the orifice. The cut is then plugged with clay until healed. At the age of ten years the boys are circumcised; but the severer operation is only

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performed at a more advanced period of life. The natives firmly believe that the operation on the urethra prevents the possibility of procreation. My observations here during the past five years have supported this view; although, on the other hand, it has come to my knowledge that the lubras of natives of other tribes so operated upon have borne children. These blackfellows, however, always deny the paternity, and, referring to the child, assert, "That one belong another blackfellow; me no get 'um piccaninny." The women are operated upon when about nine years of age with a stone knife, but the nature of the operation is obscure, although it mutilates them much. The idea here, also, is that it prevents procreation, and as far as my observations go, such lubras have never conceived. There is another custom of a revolting nature which may be mentioned, and which I have investigated with considerable trouble. Old men are often noticed with no lubras, but accompanied by one or two boys, whom they jealously guard. The impression conveyed at first to my mind was that the men were suffering from a form of *proctorexia;* but this proved to be incorrect upon questioning a communicative and intelligent boy belonging to one of these old men, whose statements have since been corroborated. By words and gestures the boy was made to understand what I thought. He laughed and shook his head, and proceeded by a suggestive pantomime to illustrate what took place. The old man, when he wished to indulge in the vice, would lie down by the fire and beckon a boy to him, and place him in a sitting posture in front. Judging from the amount of energy displayed by the boy in his description, which he illustrated by an occasional spit on the hand, the requisite excitation must be a laborious process. Upon my suggesting that the boy was only romancing, he at once exhibited an indignation at the idea of his word being doubted more virtuous than the language in which it was expressed.

Superstition.—During my stay in the Newcastle Waters country I found the blacks had a curious superstition connected with some pieces of crystallized quartz. Coming upon a camp one day, I began to examine its contents, and found a large bundle of "paper-bark." On unrolling it I found parcel inside parcel until I came to a very small one containing four or five pieces of crystallized quartz. Taking these back to the station, I inquired the use of them, and the blacks told me they were called Mowija, and were used to kill an enemy by creeping up to him when asleep and touching him on the chest with the quartz, after which he was certain to die. Taking the stone to the camp, I pretended to touch the men with it, which made them look terribly frightened and run as if for their lives. I then drew a piece across my own chest, and there was a general cry of genuine horror.

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Notes on Glacial Phenomena about Mount Gambier.

By P. H. Priestley

(Communicated by Prof. Tate).

[Read September 6, 1892.]

Abridged.

One of the most striking and persistent geological features is a stratum of sand, which overlies the limestone of the district. Round Naracoorte are sand-dunes sometimes attaining thirty and forty feet high; these continue intermittently along the high ground through Penola to Mount Gambier. This tract seems to be the watershed of the South-East; spreading away to the west are the Mosquito Plains and the swampy lands of Lucindale and Millicent; on the east are sandy ridges and small sandy flats which stretch disjointedly to the western districts of Victoria. On the western side sand is not so frequent, although great patches occur, as from Mount Gambier to Tantanoola; on the south of Mount Gambier the watershed terminates, and slopes to the sea.

The origin of this sand is not so clear as would appear at first sight; that it is partly of marine origin is proved by the presence of existing sea-shells in it, as may be gathered by reference to Tenison-Woods' "Notes on the Geology of S. A." It is in the immediate vicinity of Mount Gambier, however, that the clue is to be found.

At any one of the numerous quarries close to Mount Gambier, a number of pot-holes in the limestone may be seen in the face; these vary in width from one to five and six feet, and in depth up to ten feet; they are filled, some with the surrounding soil, others with clay (a greenish-gray predominating), interspersed with angular and rounded rock-fragments of various sizes up to two pounds in weight. The angular fragments have their edges as fresh as when first broken off the parent rock, and the rounded ones present the appearance of having been well-rolled by water.

Beneath the volcanic-tuff, the sand-layer ranges from a few to eighteen or twenty inches in thickness; it appears, to a great extent, to be angular, although containing a proportion of rounded grains, and at the same time contains a great number of edged fragments weighing up to a quarter of a pound, and rolled pieces of like size; when sufficiently thick, as at an old well about two

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miles west of Mount Gambier, on the right of the road to Millicent, where it is five feet, false-bedding is seen. I have failed to discover any striated stones or animal remains in it; though roots and partially-decayed vegetable matter are common; the vegetation, which grew on this surface, was destroyed by the showers of volcanic ash, and the remains of *Banksias*, &c., are not infrequent in the lowest stratum of volcanic tuff.

On removing the sand from the underlying limestone, its surface is seen to be as smooth as a coarse limestone can be; and is in strong contrast with a weathered face of the same stone. The conclusion is irresistible that the whole has been ground down by some hard substance. Ice?

The leading surface-feature, as viewed from the summit of the Mount, is seen to be the presence of a number of irregularly-placed low hills, running in no definite direction, no cliffs, no valleys. These are hills of denudation, and in most cases are constituted of Woods' "Upper Crag," and the quarries in the lower ground are chiefly in his "Coralline Crag." Their formation cannot be due to rain, because of the smoothness of the surface where protected from weathering influences; or to running water, as the slope of the ground, which is only about one to two hundred feet in sixty miles, would not be sufficient to create a rapid flow, were such a body of water possible.

The phenomena, which cannot be satisfactorily explained without the aid of *Ice*, are (1) the angular and rounded stones in the sand-bed; (2) the pot-holes; (3) the smoothed surface of the underlying limestone; and (4) the rounded outline of the hills.

With regard to the thickness of the ice-cover, there is little to guide one in forming an opinion; the small quantity of detritus may indicate a thick sheet, and the small size of the pot-holes suggests rapidly-moving ice, whilst the depth of denudation points perhaps to a thick ice-sheet, or at any rate to long-continued action. All strata of a later date than Woods' "Upper Crag" have been removed, and in some places his "Coralline Crag" has been denuded to a depth of twenty-five or thirty feet at least.

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Descriptions of some New Species of Marine Mollusca from Australia.

By Professor Ralph Tate, F.L.S., F.G.S.

[Read September 6, 1892.]

Plate I.

Voluta Vercouis, *spec. nov.* Pl. i., fig. 5.

Elongate-fusiform, spire turrited, short; aperture about two-thirds the total length.

Pullus hemispheric of two and a half smooth whorls; spire-whorls three and a half, the anterior ones angulated antemedially and nodosely-plicate on the angulation, extending to the anterior suture, but evanescent towards the posterior suture. Body-whorl with ten nodosities on the periphery, abruptly terminating plications, which occupy the median area; at about the anterior-fourth the suture commences to ascend on the penultimate whorl, finally attaining to the angulation; outer lip incrassated, but bevelled-off inside to a thin simple edge; columella with four plications.

The sculpture consists of axial linear grooves, hardly visible by the unaided eye, and transverse wavy-striæ; the latter occur on the spire-whorls and the shoulder of the body-whorl, and are visible only by the aid of a lense.

The colour is whitish, with intricate-linear fulvous markings; chesnut spotted around the posterior suture, and on the body-whorl also about midway between the angulation and the front.

Dimensions of two adult specimens in millimetres:—

	(1)	(2)	Mean ratio.
Total length ...	28	23·5	100
Length of aperture	18·5	15·5	66
Greatest width ...	11	9	38

Habitat.—Two adult specimens, as shown by the incrassation of the lip and its ascension on the spire, were taken alive by Dr. Verco, from 13 fathoms in Yankalilla Bay, St. Vincent Gulf; and a living adolescent example from 30 fathoms off Corney Point, Spencer Gulf. Two dead shells dredged in Investigator's Straits (*Zietz*, in S. Aust. Mus.); also one dead shell in 22 fathoms by Dr. Verco.

Affinity.—In its general characters this new species resembles a dwarf *V. Kreuslerœ*, Angas, being about one-third its size; from which it differs by its proportionately shorter spire (the ratio of

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the total length to that of aperture in *V. Kreuslerœ* is 100 to 62), more angulated whorls, by the ascension of the anterior part of the body-whorl on the spire, and by its wavy-striated surface. The last character, which it has in common with *Voluta (Volutoconus) coniformis*, Cox, is very exceptional in the genus.

Columbella cominellæformis, *spec. nov.* Pl. i., fig. 8.

Shell elongately oval, moderately solid, shining, unicolorous (pellucid-white, rose, or purplish-brown); apex somewhat apiculate; pullus semicylindrical of two smooth whorls, the first very small, the second narrow and elongate. Spire-whorls four, strongly nodulose-plicate (nine or ten on the penultimate), spirally distantly linear-sulcate, and striated transversely; the two posterior whorls are subangulated.

The body-whorl has about two plications in its posterior part, which become evanescent in an alignment with the hinder angle of the aperture; the rest of the surface is without ornament, but is sculptured with striæ of growth and incised spiral lines, the latter passing into sulci separating depressed narrow ridges on the base.

Aperture narrowly subquadrate; canal short, everted; the outer lip has a blunt edge. The medial part of the body-whorl behind the aperture is slightly compressed and there is a slight tabulation at the suture, which produce a slight insinuation at the posterior angle of the aperture.

Dimensions.—Length, 10; breadth, 4·25; length of aperture, 5 mm.

Localities.—I have collected about a dozen examples in as many years, extending from Fowler Bay, St. Vincent Gulf, Cape Northumberland to Victoria.

This species has much the same build as *C. Smithii*, Angas, and *C. atrata*, Gould, but it is conspicuously different by its smooth body-whorl and nodulose plicæ, and is moreover a much larger shell.

Turbonilla crenulifera, *spec. nov.* Pl. i., fig. 2.

Shell elongately cylindrical, thin, translucent-white, regularly axially ribbed, without spiral sculpture; the ribs are slightly arched, broad, and are continued backwards as crenatures on the very narrow obtuse shoulder of the whorl.

Whorls, excepting the apical ones, six; the pullus is heterostrophe, with the apex transverse and exsert. The axial plicæ decrease in strength as they approach the anterior suture, and on the last whorl are almost obsolete. The aperture is quadrately oval, the columella has an inconspicuous fold.

This species has much the aspect of a *Parthenia*.

Dimensions.—Length, 5; breadth, 1·25 mm.

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Localities.—Streaky and Fowler Bays in the Great Australian Bight.*

Ectorisma, *gen. nov.*

Etymology.—*Ectos*, outside; *ereisma*, support; having reference to the external ligament.

Type.—Ectorisma granulata, *spec. nov.*

Shell oval, thin, transparent, equivalve, inequilateral, slightly nacreous within; valves gaping behind; surface granulated.

Right valve with a small cuneiform cardinal tooth. Left valve, with an obsolete socket beneath the umbo; the posterior and anterior margins of the hinge-line, where overlapped by the right valve, simulate ridge-like lateral teeth, the development on the posterior side being very pronounced, whilst it is somewhat obsolete anteriorly. Ligament external, supported in the anterior part by a linear-lanceolate extension of the hinge-line.

Mantle open in front, mantle-margin without distinct sinus; siphons united, very short, encircled with cirri; foot conical.

This genus by its external ligament, thin and granulated test, and its gaping valves, is closely allied to *Pholadomya;* from *Neæromya* it differs by its dentition and closed valves. It has certain resemblances to *Poromya*, *Cryptomya*, and other related genera having an internal cartilage.

Ectorisma granulata, *sp. nov.* Pl. i., figs. 3, 3a.

Shell inequilateral, transversely oval-oblong, ventricose; anterior side rounded; posterior side longer, with a narrowed subtruncated margin; posterior margin slightly spreading to form a gape, 2 mm. at the widest, and about 6 mm. in length.

The umbos are large, transverse, approximate. Surface of valves ornamented with granules arranged in radial rows, the granulation is, however, more or less absent in the umbonal region, which is of a pearly lustre externally. There are 15 cirri surrounding the base of the united siphons.

Dimensions.—Antero-posterior, 15; umbo-ventral, 11; sectional diameter, 7·5 millimetres.

Locality.—Hardwicke Bay, Spencer Gulf; two living specimens dredged from 8 to 10 fathoms by Dr. Verco.

GENUS MYSELLA.

Mr. E. A. Smith, in Annals and Mag. of Nat. Hist., 1891, p. 235, suppresses this genus by including it under *Tellimya*, Brown (usually regarded as a section of *Montacuta);* and at the

* Tasmanian examples have been submitted to me by Rev. H. T. Hull, who considers it identical with *Chemnitzia Beddomei*, Petterd.

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same time overlooks the fact that I had already in 1887 * transferred the genus to the vicinity of *Montacuta*. Nevertheless, I am of the opinion that the details of the dentition are not identical in the two, and that *Mysella* should be retained.

The left valve has a relatively large, diverging, flattened tooth posterior to the triangular cartilage-pit; the anterior margin of the pit is thickened and margined to simulate a transverse tooth; in front of this is a small socket.

The right valve has the hinge-margin on each side of the umbo produced, which is overlapped by the hinge-line of the opposite valve; the posterior tooth-like edge interlocks above the cardinal tooth of the left valve, and the anterior, which is shorter, is received in the socket in front of the ridge-like edge of the cartilage-pit. These tooth-like margins of the right valve must be regarded as representing cardinal and not lateral teeth. I have failed to detect any trace of an ossicle, though I am not disposed to attach any particular value to its presence or absence.

Mysella ovalis, *spec. nov.* Plate i., fig. 7.

Shell thin, whitish or pale-horn coloured, pellucid, shining, ornamented with a few concentric ridges and intermediate striæ of growth; equivalve.

Valves transversely oval, sub-equilateral, depressedly convex; hinge-line arched, the anterior slope slightly incurved and shorter than the posterior slope, which is straight; anterior margin inconspicuously truncatedly-rounded, posterior margin more pointed; the ventral margin is moderately curved outwards. Umbos small, acute, approximate, antemedian.

Dimensions.—Antero-posterior diameter, 14·5; umbo-ventral diameter, 10; sectional diameter, 4·25; anterior radius, 6; posterior radius, 8·5.

A larger valve has the following diameters:—Antero-posterior, 15; umbo-ventral, 11·5.

Habitat.—Hardwicke Bay, two examples from ten fathoms, and Investigator Straits near Troubridge, two valves from 22 fathoms *(Dr. Verco)*.

This third species differs from its congeners by its less inequilateral shape and by its rounded ventral margin, but approaches more to *M. anomala* than to *M. donaciformis*.

Lucina perobliqua, *spec. nov.* Plate i., fig. 10.

Shell thick, white, obliquely oval, subventricose, inequilateral; dorsal margin concave in front, nearly straight and rapidly descending behind; posterior margin truncatedly rounded; ven-

* Trans. Roy. Soc., S. Aust., vol. IX., p. 99.

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tral margin strongly arched, roundly curving to the anterior margin.

Surface with close-set concentric striæ in the umbonal region gradually becoming linear sulci with increasing growth; towards the front margin the flat ridges do not exceed ·5 mm. wide, but they are somewhat unequal in width. The anterior and posterior slopes are ornamented with narrow, slender, minutely crenulated, radial threads; the medial area is, however, obscurely radiately-lined. The right valve has two cardinal teeth and a lateral on each side, the left valve has one cardinal tooth and two laterals on each side.

Dimensions of a large example.—Antero-posterior diameter, 28; umbo-ventral diameter, 23; sectional diameter, 15 mm.

Habitat.—As a beach-specimens collected in South Yorke-Peninsula by Messrs. Matthews and McDougall. Numerous single valves dredged by Dr. Verco, from 15 and 22 fathoms in Investigator's Straits; and from 30 fathoms off Corney Point, Spencer-Gulf.

Affinities.—This species has been known to me for some years past, but as the condition of the specimens did not permit of detailed definition, it had been regarded tentatively as the senile stage of *L. Tatei*, Angas. Some of the specimens recently obtained by Dr. Verco permit a critical comparison to be made. In outline the new shell is more comparable with *L. obliqua*, Reeve, but that shell is decussated throughout with radial and concentric striæ. *L. Tatei*, which does not much exceed 8 mm. in the umbo-ventral diameter, is ornamented with linear raised concentric lines, with broad intervening furrows, tessellated by conspicuous radial ridges; whilst the umbonal portion of *L. perobliqua*, corresponding in area with a large valve of *L. Tatei*, is marked with close-set concentric striæ, and the lateral borders only with radial threads. As yet no examples of *L. perobliqua* have been obtained so small as the largest *L. Tatei*, but the smallest of them show an obliquity which is not presented by the latter.

Lucina paupera, *spec. nov.* Pl. i., fig. 6.

Shell quadrately- and somewhat obliquely- oval, equivalve, very inequilateral, solid, dirty-white, very finely ridged concentrically; the concentric ridges very thin, inconspicuously elevated and distant, the interstices smooth; at about three-fourths to the front they become closer together and thicker; there is no trace of radial ornamentation.

The antero-dorsal margin is nearly straight, and rapidly descending; the post-dorsal margin is arched, and abruptly joins the much-rounded posterior margin; ventral margin considerably arched.

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Umbones acute, incurved, approximate; the lunule is broadly lanceolate and shallow, each valve equally contributing to its formation; escutcheon very narrow and slightly depressed, with subangular margins.

Right valve with a cardinal tooth and an anterior lateral tooth; the posterior lateral is imperfectly developed. Left valve with two divergent cardinal teeth; there are no laterals. Inner margin of valves plain.

Dimensions.—Antero-posterior diameter, 11; anterior radius, 6·5; posterior radius, 4·5; umbo-ventral diameter, 10; sectional diameter, 6 mills.

Habitat.—Three miles off Rickaby, Hardwicke Bay, Spencer Gulf, in eight fathoms. One perfect shell *(Dr. Verco)*.

This new species has much the outline of *L. quadrata*, Angas, though with a less arched antero-dorsal margin. The concentric ornamentation, the great inequilateral form and the simple dentition are associated characters, which give distinctness to this species.

Cardita gemmulifera, *spec. nov.* Pl. i., fig. 9.

A single living specimen of a *Cardita* taken in company with *C. Beddomei*, in 17½ fathoms off Corney Point by Dr. Verco, differs sufficiently from that species to justify a distinctive denomination. The costæ are ornamented with close-set rounded tubercles in place of narrow tranverse ones, and the sectional outline of the shell is slightly more tumid.

Dimensions.—Antero-posterio, 10; umbo-ventral, 9; sectional diameter, 6·75 mm.

Lithodomus projectans, *spec. nov.* Pl. i., fig. 1.

Shell cylindrical-oblong; umbones tumid, involute, projecting beyond the anterior margin; somewhat narrowed posteriorly, without angulation, to the roundly-truncated margin; anterior margin rounded; post-dorsal margin strongly arched; ventral margin nearly straight, but slightly curved antemedially.

Test covered with a reddish-brown, thick, glossy epidermis, marked with a few linear sulci which pass into abrupt subimbricating folds on the posterior slope. Interior of a violet-brown colour.

Dimensions.—Antero-posterior diameter, 28; greatest transverse diameter, 12·5; sectional diameter, 12 (vix.).

Locality.—Port Darwin *(W. T. Bednall)*.

This species is conspicuous by its projecting umbos and strongly arched dorsal line, in which particulars it resembles *L. cinnamoneus*, Chemnitz, from which it differs by its less arched dorsal line, straighter ventral margin and by the *absence* of *decussated sculpture*. It is referred to under *L. brevis*, Tate, Trans. Roy.

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Soc., S. Aust., 1887, p. 186, as a near alliance to that fossil-species.

Lithodomus cuneiformis, *spec. nov.* Pl. i., fig. 4.

Shell cuneately-oblong, without any posterior angulation, widest near front, attenuating rapidly to the narrow truncated and thickened margin; anterior side very short, truncatedly-rounded; ventral margin nearly straight, but slightly incurved about the byssal region and corresponding with an almost imperceptible depressed area, which descends with a backward inclination from the umbo. Umbos large, tumid, involute, approximate, nearly terminal, but not protruding beyond the vertical plane of the anterior margin.

Test, which is covered with a thick, brown, glossy epidermis, is marked with somewhat distant furrows, becoming on the posterior slope very prominent and subimbricate; the surface is otherwise smooth and without sculpture.

Dimensions.—Antero-posterior diameter, 17; umbro-ventral diameter, 8; sectional diameter through the umbos, 7.

Habitat.—Occupying crypts in a friable consolidated shell-ooze in eight fathoms, two miles off Port Victoria, St. Vincent Gulf; many examples *(Dr. Verco)*.

This is a very distinct species on account of its shape and absence of radial sculpture, unless it may prove to be *Modiola pulex*, Lamarck, of King George Sound; the diagnosis of which is, however, so brief as not to be satisfactorily applicable to it.

Myrina crenatulifera, *spec. nov.* Pl. i., figs. 11, 11a.

Test rather thick, moderately inflated, obliquely truncate-oval very inequilateral, equivalve; covered with a thin, brown, glossy epidermis, which is raised into slender folds of growth. The umbones are prominent, inflated, approximate, incline-over towards the front, and are nearly terminal. The anterior outline is oblique, narrowly and regularly arcuate, interrupted only beneath the hinge-extremity by an inconspicuous byssal-sinus; the posterior side is more arched and regularly rounded to the obliquely semicircular ventral margin; the dorsal outline is straight. The hinge-line is broad, transversely plicated at both ends, the plications being interrupted by a ligamental groove, which descends obliquely from the umbo; there are about twenty plications on the anterior side, and about thirty posteriorly.

The interior is bluish-brown, and glossy, with a paler or white clouding circumferentially. The edge of the valves is slightly thickened, particularly in the post-dorsal margin, which is furnished with from four to six tooth-like crenatures—the terminations of radial ridges.

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Dimensions.—Antero-posterior diameter, 2 mm.; dorsal-ventral diameter, 2 mm.; sectional diameter, 1·5 mm.

Locality.—In shell-sand, MacDonnell Bay; several examples *(Mr. A. Adcock).*

This little shell has rather the external form of *Crenella* than of *Myrina*, but as the ligamental pit is wholly excavated in the hinge, and not descending underneath it, as in the former, I refer it to the latter genus, which has hitherto been known in Australian waters only by one species—*M. Coppingeri*, E. A. Smith, Challenger Rep., from east of Cape York, in 1,400 fathoms.

EXPLANATION OF PLATE I.

Fig.
1. Lithodomus projectans. Nat. size.
2. Turbonilla crenulifera. Enlarged 5 x.
3. Ectorisma granulata. Left valve slightly enlarged.
3a. Ectorisma granulata. Side view of hinge of right valve.
4. Lithodomus cuneiformis. Slightly enlarged.
5. Voluta Verconis. Slightly enlarged.
6. Lucina paupera. Slightly enlarged.
7. Mysella ovalis. Slightly enlarged.
8. Columbella cominellæformis. Enlarged 2 x.
9. Cardita gemmulifera. Enlarged 2·5 x.
10. Lucina perobliqua. Nat. size.
11. Myrina crenatulifera. Right valve, exterior, enlarged 8 x.
11a. Myrina crenatulifera. Right valve, interior, enlarged 8 x.

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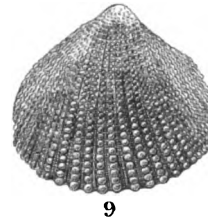

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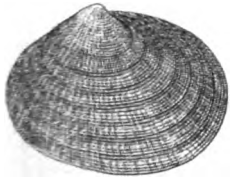

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A Third Supplement to a List of the Lamellibranch and Palliobranch Mollusca of South Australia.

By Professor Ralph Tate, F.L.S., F.G.S.

[Read September 6, 1892.]

Some Lamarckian species said to have been collected in South Australian waters have up to the present remained unrediscovered; whilst it is not improbable that the recorded localities are correct, yet because of the known distribution of the species there are grave doubts as to the accuracy of the record.

Tellina virgata, *Lin.; Lamarck*, An. s. V., vol. V., p. 521,, gives the Indian Ocean as the habitat; but Bertin, in his Monograph of the Tellines, states that Lamarck's specimens were collected in 1801 by Peron and Lesuer at St. Pierre and St. Francois Isles.

Tellina staurella, *Lamarck*, with the habitat "seas of New Holland." Bertin says that the types of *variety C.* were collected by Peron and Lesuer at Kangaroo Island, and at St. Pierre and St. Francois Isles.

The above species are known as inhabitants of the Indo-Pacific region reaching the northern shores of Australia, and there are no records of their occurrence in the temperate seas of Australia other than those above quoted.

Crassatella Lamarckii, *Nyst.*, Bull. Acad. Roy. de Belgique, 1846.

Syn.—Crassatella sulcata, *Lamarck*, varieties *a*, *c*, An. s. V., vol. V., p. 481 (non Solander). ? Crassatella sulcata, *Reeve*, Icon. Conch., t. 2, fig. 6.

The type specimens of Lamarck's *var. c* are from Kangaroo Island; the other from "La baie des Chien marins."

According to some authors, *Crassatella pulchra*, Reeve, and not *C. sulcata*, Reeve, represents the Lamarckian species, in which case it is not improbable that *C. Kingicola*, Lamk., may include it. However, I have no authentic record of that species for South Australia, though its occurrence in Port Philip Bay and Bass-Straits and on the East coast is well assured.

Some additional species of *Kellia* and allied genera, which have been collected by Mr. A. Adcock in South Australian waters, have reached me too late for inclusion in this communication.

Addenda and corrigenda to previously recorded species are placed within brackets.

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[Clavagella multangularis, *Tate.*

Aspergillum (Humphreyia) multangulare proves to have the right valve free within the adherent disk, and is therefore transferred to *Clavagella.*

Dr. Verco has dredged it in Hardwicke Bay.

Ectorisma granulata, *Tate, antea,* p. 127.

Hardwicke Bay.

Naranio rubiginosa, *A. Adams and Angas.*

Ref.—Proc. Zool. Soc., 1863, p. 425, t. 37, fig. 17.

This species differs from *N. divaricata* by its thin delicate test, regular ovate-oblong and ventricose form, and finer divaricate sculpture; in consequence of the last character, the surface is iridescent when viewed by sun-light.

The colour of the South Australian examples is pellucid-white with a pale-pink suffusion in the umbonal regions extending in rays, especially on the posterior side. The largest example, which is smaller than the type, has the following dimensions:—Antero-posterior, 13; umbro-ventral, 10; and sectional diameters, 7 millimetres.

The habitat of the two species is moreover different; *N. divaricata* lives in rocky cranies, whilst *N. rubiginosa* burrows in ooze. The original record is "Port Jackson, four fathoms, enclosed in a nodule of clay;" I do not know if it has been re-taken.

Localities.—Aldinga Bay, very rare and small, in shell-sand *(R.T.).* Dredged in Hardwicke Bay, Spencer Gulf, from eight to ten fathoms, four perfect shells, and five single valves *(Dr. Verco).*

Lucina perobliqua, *Tate, antea,* p. 128.

Investigator's Straits and Southern Yorke-Peninsula.

Lucina paupera, *Tate, antea,* p. 129.

Hardwicke Bay, Spencer-Gulf.

Cardita gemmulifera, *Tate, antea,* p. 130.

Spencer Gulf.

[Cardita bimaculata, *Deshayes.*

Ref.—Proc. Zool. Soc., 1852, t. 17, figs., 4-5.

Syn.—*C. Gunnii,* Deshayes, op. cit. p. 101; *C. Atkinsoni,* Ten-Woods, Proc. Roy. Soc., Tasm.

The two species of Deshayes, here quoted, should be regarded as one and the same; the first was attributed to New Zealand, though it is not admitted by Prof. Hutton in his revised list of New Zealand Mollusca, and the second to Tasmania; because of the assumed far-distant localities, the describer may have been induced to attach undue value to individual differences,

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which he would not have done had he known that they belonged to the same habitat.

Of the two names *C. bimaculata* is to be preferred because the diagnosis is accompanied by figures.]

[Genus Mylitta, *D'Orbigny and Recluz.*

Our species quoted under *Pythina* should be transferred to the above-named genus; as according to Mr. E. A. Smith, Annals and Mag. Nat. Hist., 1891, p. 227, *Pythina* is restricted to *P. Deshayesiana*, Hinds, and differs from *Kellia* only by its divaricate plications.

Mylitta Deshayesii, *D'Orb. and Recluz.*

Syn.—Pythina Deshayesii, *auctores*; P. Deshayesiana, *Tate*, Trans. Roy. Soc., S. Aust., 1887, non *Hinds.*

Mylitta Tasmanica, *T. Woods*

Syn.—Pythina Tasmanica, *T. Woods*; id., *Tate*, op. cit.

Smith says that this species "is identical with the preceding"; but this I think is a very hastily-formed opinion, and I doubt if he has seen the shell or giving attention to the figure or description of it.

Mylitta gemmata, *Tate.*

Syn.—Pythina gemmata, *Tate*, op. cit.

This species has been obtained in a living state at Edithburgh associated with *Ephippodonta* spp. by Mr. Matthews.]

[**Kellia rotunda,** *Deshayes.* Var., *E. A. Smith*, Challenger Report, t. xi., f. 5.

A single specimen obtained by Mr. Adcock at Hardwicke Bay is larger and less rotund than examples comparable with the types. This variety is figured by Smith, as above quoted, who remarks "the specimens from Bass Strait exhibit a precisely similar outline (to the figured example from Port Jackson), and consequently approach very closely to *K. cycladiformis* of New Zealand; and, indeed, I am rather inclined to believe that they will prove eventually variations of one and the same species."]

Mysella ovalis, *Tate, antea*, p. 128.

Hardwicke Bay and Investigator's Straits.

[**Diplodonta Adamsi,** *Angas.*

The generic reference to *Sacchia* in vol. xi., p. 68, is erroneous.]

Myrina crenatulifera, *Tate, antea*, p. 131.

MacDonnell Bay.

§**Lithodomus cuneiformis,** *Tate, antea*, p. 131.

St. Vincent-Gulf.,

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[**Barbatia Carpenteri,** *Dunker.*

Ref. and Syn.—Anomalocardia Carpenteri, Dunker, Nov. Conch., t. 30, figs. 7-9, 1860. *Arca (Barbatia) radula*, E. A. Smith, Challenger Lamellibranchiata, p. 260, t. 17, figs. 3-3b. 1885.

There can be no doubt that the above-quoted names refer to one species only; indeed, the types of each are from the same locality—Port Philip Bay, in Victoria. The name employed in the Challenger Report is adopted from the M.S. of A. Adams, in the Cumingian Collection, and its earliest appearance in print is due to Angas, in Proc. Zool. Soc., 1865, p. 655—thus five years after Dunker's diagnosis. Dunker's name must in all fairness be accepted.]

Lima squamosa, *Lamarck.*

If the difference in the number of ribs be a reliable distinctive character to separate *L. squomaso* and *L. multicostata* (there being about 24 to the former and about 36 to the latter), then *L. squamosa* must be included in our local list; as Mr. Adcock has collected two medium-sized valves on the beach at Port Lincoln. both species are recorded from the tropical seas of Australia, but I do not know of an authentic occurrence of *L. squamosa* in any other part of Australia. It is true that Menke records the name for Swan River, but it is not certain if it be correctly applicable, as at the time when Menke wrote his "Molluscorum N. Hollondiæ," the Sowerbian species had not been separated from that of Lamarck.

Pecten undulatus, *Sowerby.*

Ref.—Thes. Conch., vol. i., p. 60, t. 19, figs. 206, 207; *id*, Reeve, Conch. Icon., t. 20, fig. 73.

A white, triangularly orbicular, depressed shell, ornamented with seven or eight broad rays, which are radially ribbed; the interstitial spaces with shagreen-sculpture. About an inch-and-a-half in diameter.

Off Corney Point, in 17 to 30 fathoms; and Investigator's Straits, in 15 fathoms *(Dr. Verco)*. Also Port Phillip Bay!; off East Moncoeur Island, Bass Straits *(Challenger Report)*, and Tasmania.

[**Terebratulina cancellata,** *Koch.*

By a typographical error, this species was quoted in vol. IX. p. 110, as *Terebratella cancellata.*]

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The Gryllacridæ and Stenopelmatidæ of Australia and Polynesia.

By J. G. O. Tepper, F.L.S.

[Read September 6, 1892.]

The Gryllacridæ and Stenopelmatidæ form the two last families in Brunner van Wattenroyls' system of the Locustodea. They resemble each other considerably in general appearance, and approximately in habit; but while the former possess depressed tarsi without pulvilli, or sole pads, and lateral expansions to all the joints, the latter have compressed tarsi with usually distinct pulvilli and the first and second joints simple. The two families may be thus diagnosed:—

Gryllacridæ.—Tarsi depressed, first and second joints with lateral lobes separated by a furrow. Fore tibiæ without foramina and above without apical spines. Hind tibiæ above with single apical spines, below with two on each margin.

Stenopelmatidæ.—Tarsi compressed, first and second joints without lateral appendages, mostly provided with pulvilli. Fore tibiæ often with foramina, above with apical spines on each margin. Hind tibiæ above with single, below with two apical spines on both margins.

Although both resemble the Gryllodea, or Crickets, considerably, and have been classed with them by elder authors, including Stäl, their relationship with them is quite remote, and the four-jointed tarsi, the structure of the wings and the ovipositor relegate them to the Locustodea, notwithstanding their cricket-like habits and appearance. Brunner says:—"The first Gryllid undoubtedly descended from some Locustid, but the Stenopelmatids did not descend from that Gryllid, but were—if one may so express oneself—a second departure of the Locustids in the direction of the crickets."

In Brunner's monograph are 11 genera of Gryllacridæ and 36 of Stenopelmatidæ described as known, the former consisting of 132 species (*Gryllacris* alone of 95), and the latter of 91, whose general distribution will be apparent at a glance at the following table.

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	Gryll.	Stenop.	Gryll. in 2 continents.
Europe	0	4	—
Asia and Malayan Archipelago... ...	65	14	3
Africa, with Madagascar, &c.	19	22	1
North and Central America	5	29	—
South America and W. India	10	7	—
Australia and Tasmania	21	4	1
Polynesia, incl. N. Guinea, N. Caledonia, Fiji, New Zealand, &c.	15	11	4
Habitat unknown...	2	—	—
	137 sp.	91 sp.	9 sp.

In this paper three new genera of Gryllacridæ and two of Stenopelmatidæ are added. Described as new of the former are 18 species and of the latter three, thus raising the totals of the Gryllacridæ to 155 species in 14 genera, and the others to 9 species in 39 genera, and for Australia and Polynesia alone to 39 species of Gryllacrids in 10 genera, and 18 species of Stenopelmatids in 11 genera.

In glancing at the above table it will be noticed that Europe is the only continent from which the Gryllacrids are wholly absent, while in Asia and the adjoining Austral-Polynesian regions they attain their greatest development (119 sp.), the tropical and temperate zones forming their exclusive habitat. The Stenopelmatids show a different distribution. Being found in all continents, of which Europe contains the fewest, they reach their greatest development in the widely-separated African and North American regions, the intermediate Asiatic-Australasian region only furnishing a moderate variety, notwithstanding its immense extent. Strange to say, South America and the West Indian Island furnish the minimum of both families, notwithstanding most favourable climatic conditions, and for which the want of sufficient exploration can scarcely afford an adequate explanation.

The individuals of both families are nowhere numerous or even common. Their habits are extremely retired, and little known in detail. Many species are undoubtedly nocturnal, notably those of almost uniformly dingy or dark colouring; while the tiger-like banding of black and yellow of many Australian species appears to denote diurnal activity among grass. Some species of the Stenopelmatids never see the light of day, exclusively inhabiting dark caves. All cave-inhabiting Orthoptera belong to that family.

Most of those Australian Gryllacridæ which have been observed by me live by day in hollows under logs of wood, stones, vegetable rubbish, in disused outhouses, &c.; many inhabit hollow spaces under bark on the trunks and thicker branches of Euca

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ypts, their lair having two openings usually. While at rest in these, their head is near and toward one of the openings; the long, highly flexible antennæ being stretched behind towards the other, so as to receive timely warning of the approach of an enemy or prey from that direction. When disturbed they prove very nimble and swift runners, but do not as a rule take to-wing in daylight or in wet weather, but do so at night, or even in cloudy afternoons before sunset. If handled incautiously they are able to inflict severe bites, drawing blood readily, their mandibles being very strong, sometimes of enormous size, and the largest in general among insects. Being carnivorous, they are highly beneficial in assisting to keep down other species that would be highly injurious to agriculture if increasing without check.

I. GRYLLACRIDÆ.

The GRYLLACRIDÆ are distinguished from all other Locustids (1) by the delicate, mantis-like structure of their wings, which are richly provided with veins and veinlets, but without tympanal organs; (2) the long, articulately-inserted, movable spines on the under side of the fore and middle tibiæ; and (3) the lobe-like lateral expansion of the tarsal joints. The last abdominal segment of the male is also very abnormal, the eighth being usually enlarged, still more so the ninth, becoming cucullate and enclosing the anal organs. Brunner has figured eight different types, without, I think, exhausting them. These, however, are scarcely generally useful for more than specific distinction when both sexes are known, and assist in no wise the mating of individuals, because no corresponding structure or proportionate character exists in females.

Presence or absence of wings forms a good character to separate the family into three groups, as the organs of flight are either perfect, more or less rudimentary or wholly absent. When rudimentary, it is easy, as pointed out by Brunner long ago, to distinguish adults from nymphs by observing whether the anterior or costal margin is directed upwards or downwards, the latter infallibly denoting the adult, the former the nymph-stage. The size, shape, and venation of the wing-lobes form good specific or even generic characters.

The anterior (perfect) organs of flight, known as elytra or tegmina, are so richly and variably supplied with veins and veinlets, that their venation is useless for the object of diagnosis, while the form of the apex can only be employed in closely-related species.

The posterior or real wings, however, afford good characters for distinction by the various colouring of veins and membrane.

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These are either uni-colorous or of different tints, the veins and veinlets being either lighter or darker than the membrane, or *vice versa*, or the former lined on either side more or less by lighter or darker borders.

The chest or pectus is of very uniform structure, and only in the genus *Epacra* are there any prominent lobe-like expansions

The ovipositor is more or less straight in the adult, of considerable length usually, and stout at the base, where the lower valves are sharply turned up and quite enclosed by the upper ones. The apex is smooth and shining, neither acute nor serrated. In the nymph-stage it is shorter than in the adult, and often (if not always?) shortly incurved from near the base and carried over the back. Its length, curvature, &c., afford good characters.

Size and proportions of the various species appear to be fairly constant, also the colouring, which cannot be neglected in determination.

The most prominent characters are, however, found in the number, size, and arrangement of the spines of the legs, especially of the under side of the hind femora and the upper side of the hind tibiæ, also the relation they exhibit in number and size to each other. The femoral spines are in four to five pairs in the majority of the Australian species examined by me, but are wanting wholly or partially in rare cases, or increase to nine. Those of the hind tibiæ are quite as variable. Even this character, however, cannot be wholly relied upon, as the numbers not only vary within the species, but actual disparity in the same individual may occur, obsolete spines being indicated by wider intervals or minute tubercles, and increase of numbers by intercalated spinelets separated by narrower interspaces. But the greatest uniformity prevails in regard to the movable spines of the fore and middle tibiæ, at least in those examined by me. Here the number is five on each margin, the only exception observed being a female of *Eonius tigrinus* with four pairs. The same remark applies to the spines of the under side of the hind tibiæ, the usual number being three. The subjoined table of the variations of the spines of hind femora and hind tibiæ will show the extent of the observed variability, rarely obscured by other characters, and also serve as a ready means of identification.

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TABLE showing Variability of Spines of Hind Legs in the Species and Sexes of AUSTRALIAN GRYLLACRIDS and STENOPELMATIDS.

	Sex.	Hind femora below.				Hind tibiæ above.			
		Right Side.		Left Side.		Right Side.		Left Side.	
		intus	extus	intus	extus	intus	extus	intus	extus
A. GRYLLACRIDÆ.									
Gryllacris magnifica ...	Fem.	9	4	8	4	5	4	5	4
atrogeniculata	Male	4	3	4	3	5	6	5	6
	Fem.	5	4	5	4	3	4	3	4
marmoriceps	M.	3	4	4	3	3	3	3	3
	F.	4	3	3	3	3	3	3	3
var. nigrifrons	F.	1	3	4	5	3	3	3	3
longicornis	M.	5	3	5	3	0	0	0	0
	F.	5	4	5	2				
	(nymph)	5	3	5	4	0	0	0	0
	"	5	2	4	3				
ferrotestacea	F.	4	3	4	4	5	4	5	4
	F.	3	4	4	4	3	4	5	4
lutescens ...	M.	5	4	5	4	6	4	4	4
	F.	4	4	4	4	4	4	5	4
	"	4	4	4	4	5	4	4	3
	"	4	3	4	3	4	4	6	4
	"	4	4	4	3	4	4	4	4
straminea ...	—	2	6	4	7	6	6	6	6
subdebilis ...	—	4	7	4	2	5	7	6	5
incerta	F.	9	4	11	5	6	6	6	6
paulula	—	4	5	3	5	4	4	4	4
Molineusiana ...	—	8	8	9	8	7	6	7	6
Paragryllacris infuscata	M.	5	4	5	4	5	4	5	4
	F.	5	4	5	4	7	5	7	5
latelineolata	F.	5	4	5	3	3	4	2	4
	"	6	4	5	3	4	4	5	5
pallidolinea	M.	5	3	5	3	4	4	3	3
	F.	4	4	4	4	4	2	4	4
	"	5	3	5	4	4	4	4	4
var. minor	M.	5	3	4	3	5	4	6	4
	F.	4	3	0	0	4	3	3	3
	"	4	3	3	3	4	3	—	—
insignis ...	M.	4	4	6	4	4	4	5	4
deserta ...	M.	2	3	3	3	3	5	5	5
Eonius tigrinus	F.	3	2	2	3	4	4	4	4
	"	2	2	2	2	4	4	4	4
atrofrons	F.	6	5	5	4	6	3	6	3
fumatus	F.	2	3	3	3	6	4	5	4
Apteronomus Bordaënsis	M.	5	2	5	4	6	5	5	5
	"	5	3	5	2	5	4	5	5
var. ? ...	"	0	0	0	0	5	4	5	4
Ametrosomus Helmsi...	F.	6	5	7	8	9	7	10	6
	"	3	3	4	5	9	5	10	5
B. STENOPELMATIDÆ.									
Penthoplophora Driffieldi	F.	10	2	9	1	10	8	10	7
Pachypodagrus crassipes	M.	12	6	13	5	6	6	6	6
	"	12	5	12	4	6	5	6	5
	F.	12	6	12	7	9	8	6	6
Magareyi ...	F.	6	0	6	0	6	6	6	6

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The following list of genera indicates their general distribution, and the systematic place of the new ones :—

GRYLLACRIS, *Serv.*, all regions.
DIBELONA, *Br.*, South America.
HYPERBÆNUS, *Br.*, South America.
PARAGRYLLACRIS, *Br.*, Australia.
NEANIUS, *Br.*, Australia.
EONIUS, *gen. nov.*, Australia.
EREMUS, *Br.*, Old World.
EPACRA, *Br.*, Australia.
APOTRECHUS, *Br.*, Australia.
APTERONOMUS, *gen. nov.*, Australia.
AMETRUS, *Br.*, Australia.
AMETROSOMUS, *gen. nov.*, Australia.
SCHIZODACTYLUS, *Brullé*, Asia.
COMICUS, *Br.*, Africa.

The principal work upon which this paper is based is Brunner's Monograph of the two families, Vienna, 1888, and his descriptions of the species not actually known to me are herein reproduced. The abbreviation "Br." signifies that author's name.

GRYLLACRIS, *Serville*

Head short, globose. Occiput covered by pronotum. Vertex declined, fastigium usually wider than first antennal joint, margins obtuse, acute or keeled, and contiguous in a straight line with the frontal. Antennæ very long, usually about three times the body; joints numerous, first joint large, more or less gibbous. Eyes pear-shaped, rather prominent. Usually three ocelliform spots. Face broad, transverse or elongate. Cheeks rounded, and quite smooth. Mandibles strong. Pronotum short, truncate before and behind, disk uneven, more or less coloured; deflexed lobes roundly inserted and low, inferior margin straight. Elytra and wings *perfectly explicate*, former ample, more or less hyaline, many-veined, transverse veinlets very distinct, more or less brownish, alike in both sexes. Hind wings cycloidal, hyaline and diversely coloured, veins and veinlets often bordered brownish. Pectus narrow, *meso- and meta-notum obscurely triangular*. Fore coxæ armed with a spine. Fore and middle femora compressed, sulcate below, unarmed. Hind femora compressed, dilated cricket-like, sulcate below, the margins more or less spined. Fore and middle tibiæ terete above, with 4-5 articulately inserted spines on each margin below. Hind tibiæ *flattened above, with (mostly) five spines on either side*, also *three short apical spurs*. Three first tarsal joints *broadly lobed laterally, lobes of fourth joint much longer*, claws small. Abdomen obese, seventh and eighth segments of male more or less inflated, arched, latter often much

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elongated, ninth segment narrow at apex, furcately deflexed, wholly enclosing the anus. Cerci elongate, pilose. Subgenital lamina of male *transverse with articulately inserted styles.* Ovipositor incurved, elongate, rarely straight, apex obtuse or obliquely truncate, superior valves enclosing the inferior at the base.

GRYLLACRIS CYANEA, *Br.* (Mon., 82).

"Head *brownish-blue, labrum black,* face with three citron-yellow ocelliform spots. Antennæ, first two joints brownish, remainder pale. Pronotum laterally with reddish ferruginous callosities, deflexed lobes bordered black. Elytra *testaceous,* transverse veinlets *broadly bordered with brown.* Wings smoky, veinlets bordered brown. Fore and middle legs *blackish blue.* Hind femora with upper longitudinal half ferruginous, lower blackish-blue, below with five internal and eight external spines. Hind tibiæ chestnut-brown. Ovipositor very straight and slender, brown, apex obtuse. Subgenital lamina triangularly emarginate.

	Female.
Length of body	27 mm.
Length of pronotum	5 "
Length of elytra...	21 "
Length of hind femora	16 "
Length of ovipositor	23 "

Habitat.—North Australia."

GRYLLACRIS MAGNIFICA, *Br.* (ibid, 83).

Size large. Head, pronotum, and legs brownish-black, or in reflected light dark-blue. Antennæ lighter or duller brown, or the basal half blackish. Face with impressed dots. Ocelliform spot rather small, triangular, oval, or orbicular, pale to bright yellow. Labrum and mandibles ferruginous to reddish. Pronotum with deep transverse furrows near fore and hind margins, a conspicuous rounded ridge preceding the latter; medial line narrow, impressed; lateral lobes somewhat higher behind, subangular, inferior margin rounded. Elytra testaceous, hyaline (white and opaque with spirit specimens); veins testaceous to brownish; transverse veinlets from deep brownish black to light brown. Wings pale smoky, or concolorous with elytra, veinlets narrowly bordered with brown, and forming very regular concentric lines. Hind femora below with eight to nine internal and four external pale spines with black tips. Hind tibiæ above with five internal and four external spinelets. Abdomen above with all the segments banded brownish or black at the base. Ovipositor nearly straight, very long, apex conical. Subgenital lamina of female triangular, apex rounded.

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	Female.
Length of body	24–29 mm.
Length of pronotum	5 "
Length of elytra	45–52 "
Length of hind femora	13–16·5 "
Length of ovipositor	35–43 "

Habitat.—Port Adelaide, Lyndoch, &c., South Australia Broken Hill, Central Australia (Coll. S.A. Mus.).

Brunner's description of this magnificent species is unmis takably applicable to the four specimens in the Adelaid Museum, but as they vary in size and colour, it has been slightly departed from. The insects live solitarily under logs, &c., when the ground is dry, or under the loosely-adhering dry bark o Eucalypts, usually about the thicker branches. They appear t be much rarer now than they were some thirty years ago.

GRYLLACRIS ATROGENICULATA, *spec. nov.*

Size moderate. Head from front view broadly *oval*, testaceous occiput and fastigium deep lustrous brownish black. Fastigium *rather more than twice the width of first antennal joint.* Ocelli form spot scarcely distinct. Face, clypeus, labrum, base an first two joints of antennæ, and the palpi testaceous, borders o frontal fastigium, and a spot under each eye, deep brown. Pro notum with disk rotundately depressed or rounded, fore and hind margin raised, convex; interruptedly impressed medial lin broadly bordered with deep brown, the colour extending t scutellum. Elytra of male *exceeding abdomen by about half thei length*, of the *female scarcely reaching base of ovipositor*, testaceous veins and veinlets brown, apex subacute. Legs of body-colour except *apex of femora* and *base of tibiæ*, which are *deep black* Hind femora incrassated at the base only (female) or to th middle (male), below with four to five internal and three to fou external spines. Hind tibiæ above with three to five interna and four to six external spines. Abdomen of male with eight segment produced, ninth segment cucullate, sulcate, pilose. Sub genital lamina of male with the medial lobe *much extended quadrate, apical angles produced laterally*, lateral lobes not ex tended, angular. Styles slender, pilose. Ovipositor stout straight, apex incurved, obliquely acuminate from below, acute finely serrated above.

	Male.	Female.
Length of body	25 mm.	32 mm.
Length of pronotum ...	4·5 "	6 "
Length of elytra	38 "	28 "
Length of hind femora ...	12 "	15 "
Length of ovipositor ...	—	12·5 "

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Habitat.—Leigh's-Creek *(Poole)*, The Peake, Central Australia *(Driffield)*, (Coll. S.A. Mus.).

The species resembles Brunner's *G. nigrogeniculata* (male, Manilla) in general aspect, but the elytra are twice as long, the fastigium much wider, the spines of the hind femora much less in number, &c., hence I have considered the creation of a new species justifiable.

GRYLLACRIS MARMORICEPS, *spec. nov.*

Size moderate to large. Head oblong from front view, vertex much raised above pronotum. Face pale, with fine impressed dots; apex of labrum (male) or clypeus (female) brown, marginal ridges of cheeks dark brown, also the mandibles. Fastigium of vertex twice as wide (male) or wider (female) than first antennal joint, much depressed and flattened, marbled *paler and darker testaceous and traversed by black sinuous lines.* Lower ocelliform spot conspicuous, small, oval, acuminate above, pale-yellow; upper pair subtrigonal, dull, all bordered blackish, this colour extending to apex of fastigium, and continues in three sinuous black lines to posterior margin of occiput, two being lateral and one central, the former joined obliquely at two-thirds of their course (from front) to the middle one by emitting on either side a fine but often interrupted line, the central line being continued *from* the junction to the hindmargin; a depressed, pale, pyriform spot at the base of either of the antennæ borders and defines the frontal fastigium. Disk of pronotum straight, flattened, with a short black medial streak in front and a depressed line behind; fore margin convex, hindmargin nearly straight; deflexed lobes longer than high, nearly quadrangular, angles rounded, callosities promiscuous. Elytra more than one and a half times the length of body, veins slightly darker than body-colour. Wings rather longer than elytra, very pellucid, veins and veinlets not bordered darkly. Hind femora (male) with three or four external, and two internal spinelets (female with three). Hind tibiæ above with three or four very minute spinelets on either margin. Abdomen with ninth segment cucullate, *external margin densely but minutely spined, centrally with two very much longer spines*, remote from each other and the lateral ones. Ovipositor nearly straight, gradually tapering, apex dark, rugose, acuminate.

	Male.	Female.
Length of body... ...	34·5 mm.	37 mm.
Length of pronotum ...	6·5 "	7·5 "
Length of elytra ...	50 "	50 "
Length of hind femora...	17 "	18·5 "
Length of ovipositer ...	— "	39 "

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Habitat.—Morgan, on the Lower Murray River, South Australia *(Evans)* (Coll. SA. Museum).

VAR. NIGRIFONS.

Size smaller than the typical form, which it resembles in aspect and in the markings of the head, but differing by a broad deep black band across the face, almost obliterating all other markings, except the small, nearly circular ocelliform spot. The size is very variable, also the number of spinelets of the hind femora, which vary from 3-5 external and 1-4 internal ones, the hind tibiæ exhibit three on each upper margin with all the specimens before me. The antennæ are about four times the length of the body.

	M.	M. (nymph)	F.	F.	F. (nymph)
Length of body ...	23 mm.	20 mm.	30 mm.	21 mm.	30 mm.
Length of pronotum...	4 "	4 "	5 "	5·5 "	6 "
Length of elytra ...	39 "	9·5 "	34 "	35 "	13 "
Length of hind femora	15 "	12 "	15 "	16·5 "	15 "
Length of ovipositor...	—	—	29 "	35 "	18 "

Habitat.—Ardrossan, Yorke's Pen. (M. & F., *Cadd)*; vicinity of Adelaide (M. nymph, F. and F. nymph), South Australia (various contributions) (Coll. S.A. Museum).

The species with its variety is one of the best characterised among those examined on account of the constant markings of the head. Should the variety be deemed to deserve raising into higher rank, its varietal name might become the specific.

GRYLLACRIS LONGICORNIS, *spec. nov.*

Size large. Rusty testaceous, concolorous. Head from front view oblong-oval. Face rugose, with impressed dots, shining. Labrum (adults) oval-elongate. Clypeus subhexagonal, lateral sides shortest; above the latter *a short, conspicuous ridge* on each side, parallel, *directed towards the space between the eyes and antennæ.* Antennæ very long and slender, exceeding four times the length of body; first joint slender. Fastigium of vertex rounded, shiningly smooth, about four times the width of first antennal joint, apex slightly emarginate, apical and lateral margins *bordered narrowly with a pale line revurving upon itself, pale medial line continued to hind margin.* Space between these marginal lines, occiput and sides of head *minutely and irregularly marbled by fine pale lines,* area between them darker than the body-colour. Eyes elongate, black. Pronotum unmarked, anterior and posterior margins straight; lobes much longer than high, inferior margin straight, parallel; humeral sinus very small. Elytra and wings concolorous, pellucid; veins and veinlets of body-colour. Wings with transverse veinlets, bordered very narrowly with dark testaceous. Fore and middle legs long and slender; hind legs much incrassated at base; hind femora below

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with two to four external and four to five internal spinelets, being variable on the left and right of the same individual. Hind tibiæ above *scarcely flattened and unarmed*, or the spinelets almost imperceptible with a lens. Ovipositor very slender, nearly straight, gradually pointed, shorter in the nymph than the adult, and, being shortly recurved, is carried over the body. One adult female and two female nymphs.

	Female—Adult.	Nymphs.
Length of body ...	... 35 mm.	28 mm.
Length of pronotum	... 8 "	7 "
Length of elytra ...	... 46 "	9·5–10 "
Length of hind femora	... 16 "	15 "
Length of ovipositor	... 27 "	12–15 "

Habitat.—Palmerston, Northern Territory of South Australia (presented by the Hon. S. J. Magarey, M.B.) (Coll. S.A. Museum).

GRYLLACRIS FERROTESTACEA, *spec. nov.*

Size rather large. Ferruginous testaceous, concolorous. Head from front view oval. Face rugose; labrum *subcircular, raised basal part small.* Clypeus transverse, *anterior and posterior margins straight.* Mandibles and eyes black. Ocelliform spot of body-colour, elongate, acute above. Fastigium of vertex highly arched, twice as wide as first antennal joint, apex more or less emarginate, unmarked. Antennæ about two and a half times as long as the body, and of the colour of the latter entirely. Pronotum with the disk somewhat saddle-shaped, flattened, and with a depressed medial line; fore and hind margins convex, former sometimes with a short black line, latter with a black band; lobes *slightly longer than high*, margins straight, angles rounded. Elytra and wings long, concolorous; veins ferruginous, veinlets paler, membrane pellucid. Hind femora stout, below with four spinelets on each margin usually. Hind tibiæ above with four external and five internal spinelets. Ovipositor very slender, considerably incurved, *finely hirsute;* apex gradually acuminate, not acute; inferior keels *short, enclosing a small circular depressed area.*

	Female.
Length of body	27–34 mm.
Length of pronotum	5 "
Length of elytra	50 "
Length of hind femora	15–17 "
Length of ovipositor	44–45 "

Habitat.—Northern Territory of South Australia (presented by Dr. S. J. Magarey) (Coll. S.A. Museum).

This species resembles *G. lutescens* in general aspect, but the colour and various other distinctions render it advisable to separate the two for the present, until the discovery of the other sex will decide the question.

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GRYLLACRIS LUTESCENS, *spec. nov.*

Size large. Pale dirty yellow. Eyes, *fore and hindmargins of pronotum*, bases of abdominal segments, banded black or blackish. Head oval, wider than the pronotum, face slightly rugose with irregular impressed dots, ridges not conspicuous. Labrum almost *circular*, the *middle of base suborbicularly raised* with a medial depressed line continued over the clypeus, which is transverse, posterior margin curved. Frontal fastigium short, inferior limit undefined. Ocelliform spot oblong, acute above, *ivory white*. Space between the antennæ mostly *blackish*, and *enclosing the three pale spots*. Fastigium of vertex short, about one and a-half times the width of first antennal joint, with conspicuous lateral keels, unmarked. Antennæ very slender, pale, about four times the length of body. Eyes black. Pronotum with *fore margin straight, more or less marked with black*, hindmargin *rounded*, produced, *bordered broadly with black;* lobes slightly higher in front, margins straight, angles rounded. Elytra and wings testaceous, pellucid. Transverse veinlets of the latter pale, very slightly bordered dusky. Hind femora below with four spinelets on each margin usually. Hind tibiæ above with five to six external and four internal spinelets. Abdomen of male with ninth segment cucullate (Brunner's type "D"), internal margin *not dentate*, but *centrally with two long spines*. Subgenital lamina of male *deeply trilobate, each lobe again emarginate*. Ovipositor sword-shaped, slender, apex conical. Subgenital lamina of female oboval, keels widely separating, extending to the apex. One male, four females.

	Male.	Female.
Length of body ...	30 mm.	28–37 mm.
Length of pronotum ...	5 "	5–5·5 "
Length of elytra ...	47 "	36–40 "
Length of hind femora	15 "	15–17 "
Length of ovopositor ...	— "	33–40 "

Habitat.—Innamincka, Central Australia, &c. (Coll. S.A. Museum).

GRYLLACRIS DIMIDIATA, *Br.* (Mon. 87).

"Size large. Colour brownish testaceous. Face black. Femora all black below. Knees testaceous, also all the tibiæ.

	Female.
Length of body	30 mm.
Length of pronotum	8 "
Length of elytra	39 "
Length of hind femora	20 "
Length of ovipositor	25 "

Habitat.—New Britain."

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GRYLLACRIS EXCELSA, *Brunner* (Mon. 107, fig. 41, D.).

"Size large. Colour testaceous. Head brownish. Labrum testaceous. Antennæ brown. Femora below and at apex brownish.

	Male.	Female.
Length of body	48 mm.	42 mm.
Length of pronotum ...	11 "	11 "
Length of elytra	38 "	35 "
Length of hind femora ...	26 "	23 "
Length of ovipositor ...	—	26 "

Habitat.—Duke of York Island."

GRYLLACRIS APPENDICULATA, *Br.* (ibid 108, fig. 41, H.).

"Size small. Brownish ferruginous, with piceous marks. Occiput and pronotum with brownish lines, latter also with two lateral brown lines, but without the medial line. Wings hyaline, transverse veinlets bordered brownish.

	Male.	Female.
Length of body	28 mm.	32 mm.
Length of pronotum ...	7 "	7·8 "
Length of elytra	27 "	31 "
Length of hind femora ...	18 "	19 "
Length of ovipositor ...	—	20 "

Habitat.—New Britain."

GRYLLACRIS AURANTIACA, *Br.* (ibid 112).

"Size small. Ferruginous. Fastigium of vertex depressed, margins keeled. Wings deeply orange at the base, fore part without brown marks, the brownish bands distinctly circumscribed. Abdomen of male with ninth segment rounded. Ovipositor falcate. Subgenital lamina of female flat.

	Male.	Female.
Length of body ...	28 mm.	27–31 mm.
Length of pronotum ...	6·5 "	7– 7·8 "
Length of elytra ...	27 "	27–29 "
Length of hind femora	16 "	16–18 "
Length of ovipositor ...	—	1–17 "

Habitat.—New Britain, Amboyna."

GRYLLACRIS DUBIA, *Le Guillon* (ibid 111).

"Deeply ferruginous. Wing concolorous, pale, hyaline, veins and veinlets pale. Hind femora below with ten very minute spinelets on each margin. Fore tibiæ above brownish, streaked with blackish, also hind femora.

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	Female.
Length of body	22 mm.
Length of pronotum	5·6 "
Length of elytra	20 "
Length of hind femora	14·8 "
Length of ovipositor	16 "

Habitat.—Fiji Islands."

GRYLLACRIS OCEANICA, *Le Guillon* (Br. Mon., 112).

" Pale reddish-yellow, medial ocelliform spot small, labrum brownish-yellow, mandibles brownish-red, palpi testaceous, elytra subpellucid, all the tibiæ brownish in the middle. Abdomen brownish above." Length of body of male, 19 mm. (Original description, 1841).

Habitat.—Hamoa (most probably SAMOA) Island."

GRYLLACRIS STRAMINEA, *Br.* (ibid, 115).

Size moderate. Straw-coloured. Head oblong from front view, depressed. Face brownish-ferruginous, mandibles much darker; medial line raised, uncoloured; ocelliform spot large, angularly oval, yellowish-white, extending almost to the apex of frontal fastigium. Eyes black, elongate-oval. Fastigium of vertex scarcely as wide as the first antennal joint; apex prominent, ferruginous, slightly sulcate. Antennæ wholly pale, concolorous with body; about five times the length of the latter; first joint longer than the eyes. Pronotum with the disk very uneven, medially depressed, foremargin rotundately produced, hindmargin almost straight, shortly emarginate; lobes with the inferior margin semicircular, deeply sulcate. Elytra and wings very pale and pellucid, veins and veinlets concolorous with membrane, in length slightly exceeding the ovipositor, apex of former acuminate. Legs rather short. First spine of fore and middle tibiæ longest, the others gradually shorter. Hind femora below, with two to four internal and six to seven external spinelets, mostly very small. Hind tibiæ above, with six spinelets on each margin. Ovipositor curved downward at the base, then almost straight; apex incurved, gradually acuminate, shining. One female.

	Male *(Brunner)*.	Female.
Length of body	24 mm.	22 mm.
Length of pronotum ...	4·5 "	4 "
Length of elytra	36 "	36 "
Length of hind femora ...	14 "	14 "
Length of ovipositor ...	—	19 "

Habitat.—South Australia (Adelaide, *Brunner)* (Coll. S.A. Museum).

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In so assigning the female in the South Australian Museum, from which the above description has been mainly drawn up, it must be remarked that, though slightly shorter in the body, it agrees very well with the principal characters, the differences being sexual and individual.

GRYLLACRIS LIGATA, *Br.* (Mon., 115).

"Size large. Pale testaceous. Head pale, face with a broad, deeply black transverse band; also the pronotum. Ovipositor narrow, acuminate, incurved.

	Male.	Female.
Length of body	45 mm.	47 mm.
Length of pronotum ...	8 "	10 "
Length of elytra	43 "	48 "
Length of hind femora ...	18 "	22 "
Length of ovipositor ...	—	33 "

Habitat.—New Britain, and New Hanover Islands."

GRYLLACRIS DEBILIS, *Br.* (ibid, 116).

"Size small. Pale ferruginous. Fastigium of vertex rounded, one and a half times the width of first antennal joint. Ocelliform spot scarcely distinct. Elytra obtuse, subpellucid. Wings cycloidal, hyaline. Femora at apex and base of tibiæ reddish. Hind femora below, with four internal and five external spines. Ovipositor slender, scarcely incurved, and scarcely exceeding the hind femora, acuminate. Subgenital lamina of female obtusely triangular.

	Female.
Length of body	21 mm.
Length of pronotum	4 "
Length of elytra	18 "
Length of hind femora	10·5 "
Length of ovipositor	12·5 "

Habitat.—North Australia."

GRYLLACRIS SUBDEBILIS, *spec. nov.*

Size small. Uniformly testaceous. Head from front view suborbicular, depressed. Face with indistinct *pale medial line*, *ocelliform spots none*. *Eyes and mandibles black*. Fastigium of vertex twice as wide as first antennal joint; lateral ridges near apex narrowly brownish; also a small spot on each side of superior external angle of clypeus. Antennæ about twice the length of body, and of the same color. Pronotum with disk subtriangular, medially depressed; fore and hindmargins raised, former convex, latter concave; lobes deeply sulcate, inferior margin slightly rounded, angles subrotundate. Elytra scarcely

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exceeding the ovipositor, concolorous. Wings shorter, similar t elytra. Legs long, pale. Hind femora below with four externa and seven internal spinelets (on the right, while there are onl two on the left). Hind tibiæ above with five to seven externa and five to six internal spinelets. Ovipositor *short, much incurved acuminate*, and with a *fuscous line on each side.*

	Female.
Length of body...	16 mm.
Length of pronotum	4 "
Length of elytra	21 "
Length of hind femora...	12·5 "
Length of ovipositor	7·5 "

Habitat.—Northern Territory of South Australia (Coll. S.A Museum). (Presented by Hon. S. J. Magarey, M.B.).

This species appears to be allied to *G. debilis, Br.*, but differ from it and all others examined in the structure of the pronotum elytra, and ovipositor, the latter especially being remarkabl short.

GRYLLACRIS FERRUGINEA, *Brunner* (Mon., 117).

"Size small. Deeply ferruginous. Resembling *G. debili* Pronotum deeply sulcate. Elytra deeply ferruginous. Hin femora below with 10 spinelets on each margin.

	Male.	Female.
Length of body	10 mm.	21 mm.
Length of pronotum ...	5·6 "	5·6 "
Length of elytra ...	19 "	19 "
Length of hind femora...	13 "	13 "
Length of ovipositor ...	—	14 "

Habitat.—Fiji Islands."

GRYLLACRIS EXIGUA, *Br.* (ibid, 117).

"Size very small. Testaceous. Fastigium of vertex scarcel wider than first antennal joint, obtuse. Antennæ very long Elytra ferruginous, less than one and a half times the length o the hind femora. Latter below almost smooth. Described fron a specimen without body.

Length of pronotum	3·5 mm.
Length of elytra	10 "
Length of hind femora	8·5 "

Habitat.—New Caledonia."

GRYLLACRIS HYALINA, *Br.* (ibid, 117).

"Size moderate. Straw-coloured. Fastigium much wide than first antennal joint. Ocelliform spot citron-coloured, ellip tical. Elytra acuminate, straw-coloured, subpellucid, two and

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half times longer than hind femora. Wings obtuse, triangular, subhyaline. Hind femora with eight internal and five external spinelets. Ovipositor almost straight, acuminate. Subgenital lamina of female triangular, with incurved sides, apex truncate.

	Female.
Length of body	18 mm.
Length of pronotum	4 "
Length of elytra	25 "
Length of hind femora	10 "
Length of ovipositor	14 "

Habitat.—Australia."

GRYLLACRIS GEMINA, *Br.* (Mon., 17).

"Resembles the preceding, but differs by the fastigium being scarcely wider than the first antennal joint; elytra nearly three times the length of the hind femora, latter dotted with black, all the tibiæ at the base indistinctly blood-red, and the subgenital lamina of the female very little emarginate.

	Female.
Length of body...	18 mm.
Length of pronotum	4 "
Length of elytra	32 "
Length of hind femora...	11·5 "
Length of ovipositor	14 "

Habitat.—North Australia."

GRYLLACRIS MAJOR, *Br.* (ibid, 118).

"Size moderate. Straw-coloured. Fastigium scarcely wider than first antennal joint, flattened. Ocelliform spot large, citron-coloured. Elytra very large, acuminate, about three times larger than hind femora. Latter with seven to eight long spinelets on each margin. Tibiæ blood-red about the base. Ovipositor distinctly incurved. Subgenital lamina of female obtusely triangular.

	Female.
Length of body	21 mm.
Length of pronotum	5 "
Length of elytra...	41 "
Length of hind femora	13 "
Length of ovipositor	21 "

Habitat.—Sydney, N. S. Wales."

GRYALLACRIS ADVENTA, *Br.* (ibid, 118).

"Resembles the last. Fastigium with subcarinate margins narrower than first antennal joint. Hind femora below with

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four to five spinelets on each margin. Ovipositor nearly straight, apex suddenly incurved, acuminate. Subgenital lamina of female narrow in the middle, apex truncate, quadrangularly emarginate.

	Female.
Length of body	23 mm.
Length of pronotum	4·5 "
Length of elytra	34 "
Length of hind femora	12 "
Length of ovipositor	17 "

Habitat.—Queensland."

GRYLLACRIS INCERTA, *spéc. nov.*

Size rather large. Pale testaceous. Head from front view subglobose, much wider than pronotum. Face pale, nearly smooth, shining. *Clypeus shortly subtriangular, emarginate.* Labrum *short, broader than long, base narrow, with a ridge fitting into the emargination* of the clypeus. Mandibles deep black. Ocelliform spot inconspicuous, orbicular. Fastigium of vertex tumid, termination indistinct, about three times as wide as first antennal joint; subtriangular space between apex and spot whitish, with reddish borders. Pronotum very round, foremargin straight, hindmargin *slightly emarginate;* lobes *higher than long*, margins nearly straight, angles rounded. Elytra broad, twice as long nearly as the body; veins and veinlets of body colour. Wings as long as elytra, pellucid, veinlets pale. Hind femora below with four to five external and ten to eleven internal spinelets. Hind tibiæ above, with six spinelets on each margin. Ovipositor slightly acuminate, somewhat dilated towards the apex, but not acute, and unarmed. Subgenital lamina of female broad, deeply and widely emarginate.

	Female.
Length of body	32·5 mm.
Length of pronotum	5 "
Length of elytra	54 "
Length of hind femora	17 "
Length of ovipositor	32 "

Habitat.—Leigh-Creek, South Australia (*A. A. Poole*, in Coll. S.A. Museum).

There being only a specimen of the female in the collection, the claim to specific rank is perhaps uncertain; but the form of the clypeus, labrum, pronotal lobes, and subgenital lamina distinguish it from all the others. The ova removed from it are oblong-cylindrical, pale testaceous, measure 4·5–5 mm. in length and 1·25 mm. in transverse diameter, and under a Coddington lens, exhibit close, regular, and oblique lines in transverse sets.

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GRYLLACRIS PAULULA, *spec. nov.*

Size small. Testaceous. Head oval from front view. Face with upper part blackish-brown variegated, *the lower border extending from below the eye in a semicircular curve to or partly over the clypeus*, with undefined, though distinct, outline; remainder of latter and the labrum pale; mandibles ferruginous, palpi pale. Ocelliform spot oval, acute above, pale yellow. Eyes elliptical, wider above. Fastigium of vertex one and a half times the width of first antennal joint, apex conical, disk in front *rather deeply depressed, bordered by high narrow keels;* exteriorly with a whitish oval spot on each side behind the antennæ, dark-brown (also occiput), and with a fine pale, indistinct medial line. Pronotum saddle-shaped, front straight, with a narrow triangular black spot in the middle; hindmargin straight, slightly raised, with a blackish-brown band extending beyond the humeral sinus; lobes rather high, subangular, margins almost straight. Elytra with apex rounded, veins ferruginous. Wings paler, veins and veinlets scarcely darker than membrane, pellucid. Legs rather long, fore and middle tibiæ, also all knees, pale blackish-brown. Hind femora stout, below with three to four internal and five external spinelets, the emargination between the last spine and the knee being short and deep. Hind tibiæ pale, with four spinelets on each margin. Abdomen, with base of all segments, *banded blackish-brown, dorsally and laterally.* Ovipositor slightly incurved, apex acuminate, subacute, smooth. Subgenital lamina of female semicircular, with two strong keels below. Two females.

	Female.
Length of body	23–25 mm.
Length of pronotum	3– 4 "
Length of elytra	25–27·5 "
Length of hind femora	11–13 "
Length of ovipositor	30–34 "

Habitat.—S. Australia; Western Plains *(A. J. Percy)*, Monarto *(Tepper)* (Coll. S.A. Museum).

Allied in size to *G. subdebilis*, and in wing structure to *G. atrogeniculata*, but differing from either by the marking of the face, form of fastigium, the banding of the abdomen, &c.

GRYLLACRIS MOLINEUSIANA, *spec. nov.*

Size small. Pale testaceous. Head from front view subcuneiform, almost flat above. Face blackish-brown, apex of fastigia, disk of clypeus and labrum dark-reddish, margins darker, medial line obsolete, ocelliform spot large, broadly oval, bright yellow, lateral spots on external sides of fastigium also bright yellow. Eyes greyish-brown. Fastigium of vertex about

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one half wider than first antennal joint, same as body-colour. Antennæ not much exceeding the elytra in length. Pronotum with disk almost evenly rounded, slightly constricted behind, medial impressed line ending at posterior furrow, foremargin slightly rounded, hindmargin produced, rounded. Elytra and wings ample, veins mostly pale reddish-brown, membrane of body-colour, pellucid, apex bluntly acuminate. Fore and middle tibiæ, also all the tarsi, crimson. Hind femora below with eight external and eight to nine internal spinelets. Hind tibiæ above with seven internal and six external spinelets. Abdomen above the last segment *pitchy and deep black*, eighth segment enlarged, ninth segment with *apex wasp-like acuminate*. Subgenital lamina of male *very short, medial lobe spine-like, lateral lobes almost obsolete*. Styles longer than cerci, both pilose.

	Male.
Length of body	18 mm.
Length of pronotum	3·5 "
Length of elytra	33 "
Length of hind femora...	12 "

Habitat.—Wirrabara Forest Reserve, South Australia (Coll S.A. Museum).

The specimen described was captured and presented by A. Molineux, Esq., F.L.S., the active Secretary of the Bureau of Agriculture, and is dedicated to him as a slight acknowledgment of his unobtrusive and disinterested zeal in promoting natural history for many years. The species is distinct from all others by the intense dark colour of the terminal abdominal segments, the ninth approaching Brunner's type "A," but the subgenital lamina presents quite a different aspect. The external darkly tipped spines of the hind femora are much larger than the internal, the more or less red-coloured ones of the hind tibiæ are almost equal in size.

PARAGRYLLACRIS, *Gerstaecker* (Brunner, Mon., 369, fig. 44).

Habits of *Gryllacris*, but differing in the form of the subgenital lamina of the male, the latter possessing no *articulately* inserted styles, and the hind femora (in the typical form) being armed with five to seven minute spinelets.

Fastigium of vertex usually twice as wide as the first antennal joint. Elytra ample, obtusely acuminate, never obtuse, veins and veinlets more or less infuscate. Wings subhyaline, never striped. Hind femora below with rather stout spines, often distant or absent. Fore and middle tibiæ below with five pairs of spines. Hind tibiæ above with five spines usually on each side. Abdomen of male with the eighth dorsal segment normal, the ninth more or less hood-like, the hindmargin truncate or

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allous-appendiculate. Subgenital lamina of male broad, transverse, medially lobed, laterally with style-like appendages. Ovipositor always nearly straight, very long and slender. Subgenital lamina of female very transverse.

Species all Australian.

I have retained Brunner's genus, and included some new species that appeared to conform to the characters, but doubt whether it can be maintained as more than a subgenus to *Gryllacris*, because the main distinctions appertain to the male sex alone, which is very inconvenient, it not always being possible either to have *both* sexes handy, or to mate individuals correctly, when not caught *in coitu*. Concerning the number of spinelets of the hind femora, it has been shown already that they are too variable even individually to serve as a reliable guide. It is therefore quite possible that some of my species under this genus may have to be transferred to *Gryllacris* upon better acquaintance, and *vice versa*.

PARAGRYLLACRIS COMBUSTA, *Gerstaecker* (Br. Mon., 370, fig. 44*a*).

"Testaceous, shining. Pronotum marked with black. Face deep black, concolorous, or with a yellowish spot. Occiput testaceous, marked brownish. Medial vitta large, trifoliate. Veinlets of elytra paler than membrane.

	Male.	Female.
Length of body ...	32 mm.	37 mm.
Length of pronotum ...	7·5 "	8 "
Length of elytra ...	37 "	38 "
Length of hind femora...	18 "	18 "
Length of ovipositor ...	— "	23–26 "

Habitat.—Sydney, N.S. Wales; Rockhampton, Queensland; Lord Howe's Island."

PARAGRYLLACRIS INFUSCATA, *Br.* (Mon. 371).

Testaceous. Head deep black (or partly dark brown), except hind margin of cheeks, ocelliform spot, clypeus, labrum and palpi, which are testaceous. Fastigium of vertex one and a-half times to twice as wide as first antennal joint, depressed, margins keeled. Antennæ first and second joints pale, remainder black (or brown). Pronotum testaceous (or brownish), hindmargin black, anterior angles acute (or rounded?). Elytra and wings ample, hyaline, veins and veinlets brownish. Femora all brownish at the apex. Hind femora with four to five spinelets on each margin. Fore tibiæ blackish, except at apex (or only about the knees), spines testaceous. Hind tibiæ above with (four to seven) black (or black tipped) spinelets. Ovipositor not (or not much) longer than hind femora, gradually incurved, acuminate. Sub-

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genital lamina of female short, transverse, margins rounded (subsemicircular). Keels wide apart. Subgenital lamina of male hooded (cucullate) in the form of Brunner's type "C." Cerci small, visible from the side above the lateral lobes.

	Male (m.).	Female (m.).	Female (Br.).
Length of body ...	33 mm.	38 mm.	35 mm.
Length of pronotum ...	6·5 "	6·5 "	6 "
Length of elytra ...	38 "	40 "	47 "
Length of hind femora	16 "	15 "	16 "
Length of ovipositor ...	—	33 "	15 " (?)

Habitat.—South Australia: Blakiston *(T. D. Smeaton)*, Adelaide *(Selway)*, (Coll. S.A. Museum), (Adelaide, *Brunner)*.

There is some doubt whether I have correctly assigned my specimens to Brunner's species, but it is the only one which they at all approach in general aspect, and I deem it inadvisable to constitute a new one for their reception.

PARAGRYLLACRIS CALLOSA, *Br.* (ibid, 371, fig. 44 B).

"Testaceous chestnut. Occiput brown. Fastigium of vertex one and a-half times wider than first antennal joint, flattened. Face and antennæ testaceous. Pronotum concolorous. Elytra acuminate, of smoky colour, also the wings; veins and veinlets brownish, latter 'perfect.' Hind femora below unarmed, or with two to three spinelets. Abdominal segments bordered brownish Eighth abdominal segment of male not produced, ninth segment horizontally produced, triangularly emarginate, on both sides with a very prominent callous tubercle. Ovipositor very long and straight.

	Male.	Female.	Female.
Length of body ...	28 mm.	28 mm.	38 mm.
Length of pronotum ...	6 "	6 "	8·5 "
Length of elytra ...	38 "	28 "	55 "
Length of hind femora...	16 "	16 "	20 "
Length of ovipositor ...	—	37 "	36 "

Habitat.—Port Denison, Sydney, N.S. Wales; Melbourne, Victoria."

PARAGRYLLACRIS LATELINEOLATA, *Br.* (Mon., 128, fig. 44 C).

Variety (?). Pale yellow. Fastigium of vertex flat, one and a-half times to twice as wide as first antennal joint, margins acute. Face and clypeus rough with impressed dots, testaceous (to dark brownish). Labrum and mandibles reddish ferruginous. Antennæ ferruginous (or first two joints pale). Pronotum with anterior angles produced, somewhat acute, fore and hind margins striped brownish. Elytra subhyaline, veins ferruginous, transverse veinlets bordered darkly very narrowly. Hind femora

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below with three to four spinelets on each margin. Knees all brownish. Eighth abdominal segment of male very parabolically produced, ninth segment orange-coloured, much elongated, cucullate, truncate. Subgenital lamina of male transverse, middle lobe short, emarginate, lateral lobes almost as long, styliform, terete. Ovipositor very narrow, slightly incurved; seventh ventral segment of female trapezoidal. Subgenital lamina of female ample, rotundate margin obtuse.

	Male (Br.).	Female (Br.).	Female (m.).	Female (m.).
Length of body ...	33 mm.	36–40 mm.	33·5 mm.	32 mm.
Length of pronotum	6·5 "	7– 8·5 "	6·5 "	6·5 "
Length of elytra ...	38 "	40–46 "	36 "	38 "
Length of hind femora	17 "	20–22 "	13 "	15 "
Length of ovipositor	—	40 "	43 "	42 "

Habitat.—South Australia: Vicinity of Adelaide (Coll. S.A. Museum). Melbourne (*Brunner*).

The two specimens in the South Australian Museum are doubtfully included in this species as a variety. The bracketted parts of the above description denote the differences. Some ova were obtained from one specimen. They are brown, elongate-elliptical, 4·5 mm. long by 1·3 mm. wide, and ornamented by regularly arranged microscopical impressions.

PARAGRYLLACRIS PALLIDOLINEA, *spec. nov.*

Size moderate or large. Brownish testaceous. Head globose from front view; occiput high. Face, clypeus and cheeks rugose, pale, almost whitish testaceous. Labrum ferruginous. Ocelliform spot pyriform. Frontal fastigium deeply sulcate laterally, apex separated from fastigium of vertex by a straight line. Fastigium of vertex about twice as wide as first antennal joint, much rounded, prominent, shining, with a *pale, somewhat sinuous, medial line, indistinct, pale, cerebriform reticulations all over it and extending to occiput;* posterior margin of the latter pale. Pronotum stout; fore and hind margins more or less broadly blackish, an acute prolongation of the anterior blackish band accompanying the impressed medial to about the middle; fore and hind margins nearly straight; lobes much longer than high, margins nearly straight, angles rounded. Dorsal abdominal segments with obscure posterior margins. Elytra ample, veins and veinlets brown, membrane much paler. Wings slightly exceeding elytra, veins ferruginous, transverse veinlets rather irregular, pale, often with a very narrow dark medial line and bordered narrowly with brownish on each side; membrane similar to elytra. Legs of body-colour, knees more or less dark. Hind femora stout, base very much incrassated, with a deep medial longitudinal furrow, below with three to four (male) or five

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(female) external and five (male) or four (female) internal spinelets. Hind tibiæ above with three to four spinelets on each margin in both sexes. Ninth abdominal segment of male hooded (type "C" of Brunner). Subgenital lamina of male with *four lobes of subequal length and width.*

	Male.	Female.
Length of body ...	... 31 mm.	38 mm.
Length of pronotum	... 5·5 "	6·5 "
Length of elytra ...	... 36 "	40 "
Length of hind femora	... 15 "	18–29 "
Length of ovipositor	... —	35–40 "

Habitat.—Vicinity of Adelaide, South Australia; three specimens.

Variety.—MINOR. Resembling the above, but smaller.

	Male.	Female.
Length of body	.... 27 mm.	28–30 mm.
Length of pronotum	... 5·5 "	6·5 "
Length of elytra	... 35 "	38 "
Length of hind femora	... 15 "	17–18 "
Length of ovipositor	... —	38 "

Habitat.—Neighbourhood of Adelaide; three specimens. (Collection S. A. Museum).

PARAGRYLLACRIS EXSERTA, *Br.* (Mon., 372).

"Differs from *P. latelineolata* in smaller size, brownish colour, and the transverse veinlets of the wings being narrowly circumscribed with brownish. Hind femora below with four internal and five external spinelets. Abdomen of male with the *last dorsal segment less produced.* Subgenital lamina with the medial lobe longer, *lateral lobes narrow, excertedly produced.*

	Male.
Length of body	... 28 mm.
Length of pronotum	... 5·8 "
Length of elytra	... 38 "
Length of hind femora	... 15 "

Habitat.—Queensland."

PARAGRYLLACRIS LOBATA, *Br.* (ibid).

"Testaceous chestnut colour. Face brownish, very rugose with impressed dots. Ocelliform spot orbicular, citron yellow. Labrum and mandibles ferruginous. Elytra and wings smoke-coloured, transverse veinlets very narrowly bordered with brownish. Hind femora below, with six internal and three to four external spinelets. Abdomen of male with last segment moderately produced, chestnut-coloured, ninth segment ending in two very short spines.

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	Male.
Length of body	30 –43 mm.
Length of pronotum	6·5– 8 "
Length of elytra	42 –44 "
Length of hind femora	19 –20 "

Habitat.—Rockhampton, Queensland."

PARAGRYLLACRIS MODESTA, *Br.* (ibid).

"Size small, deep brownish-testaceous. Fastigium of vertex *scarcely wider than the first antennal joint, angles keeled.* Face smooth. Pronotum with anterior angles obtuse. Elytra and wings smoky, veins and veinlets brown. Hind femora below with six internal and four external spinelets. Abdomen with last segments scarcely produced, ninth ending in two spines. Subgenital lamina with middle lobe tridentate, lateral lobes very narrow, longer than the middle.

	Male.
Length of body..	24 mm.
Length of pronotum	5 "
Length of elytra	34 "
Length of hind femora	14·5 "

Habitat.—Port Adelaide, South Australia."

PARAGRYLLACRIS INSIGNIS, *spec. nov.*

Size small. Pale testaceous. Head oval from front view, slightly depressed, *all parts*, except the eyes, *of body colour.* Fastigium of vertex tumid in front, about twice as wide as first antennal joint. Antennæ about three times the length of body. Pronotum somewhat saddle-shaped, disk broad, flat, behind slightly depressed medially, constricted only near foremargin; lobes subquadrangular, angles rounded, margins straight, callosities scarcely developed; hind margin with a dusky border. Elytra broad, acuminate, veins pale ferruginous. Wings somewhat shorter, veins pale, membrane of both elytra and wings very pale and pellucid. Fore and middle tibiæ with second spine longest, concolorous. Hind femora below with four external, and five to six internal blackish-tipped spinelets. Hind tibiæ above with four external and three to four internal spinelets. Abdomen of male with *ninth segment enlarged, tumid* (resembling Brunner's type "A," but the subgenital lamina in the form of type "C"). Subgenital lamina of male with *medial lobe deeply emarginate, lateral lobes styliform.*

	Male.
Length of body	24 mm.
Length of pronotum	3·5 "
Length of elytrya	40 "
Length of hind femora	12 "

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Habitat.—Western Plains, South Australia *(A. J. Percy)* (in Coll. S.A. Museum).

The species differs from others chiefly, by the want of colour marks, and the peculiar structure of the last abdominal segment, besides size and other details.

PARAGRYLLACRIS DESERTA, *spec. nov.*

Resembling *P. latelineolata*, Br. Size small. Pale testaceous. Fastigium of vertex *slightly carinate in front*, more than twice as wide than the first antennal joint; margins acute, subcarinate. Face and clypeus very rugose from impressed dots, testaceous. Medial ocelliform spot oval, citron coloured, laterally above two small ones testaceous. Labrum testaceous, above with a piceous triangular spot. Mandibles piceous to black. Antennæ pale ferruginous testaceous. Pronotum with the disk marked by a short black wedge-shaped streak in front and behind, bordered broadly piceous; lobes with anterior angles rounded. Elytra subhyaline, veins pale ferruginous. Wings similar, veins very narrowly bordered brownish. Hind femora below with *three spinelets on* each margin, knees brownish. Hind tibiæ above with five spinelets on each margin. Tibiæ of all the legs more or less blackish near the middle, apices indistinctly dark coloured. Abdomen with eighth and ninth segments *pilose*, otherwise resembling *P. latelineolata*. The subgenital lamina of the male also resemble those of that species, but the lateral lobes are *distinctly and unequally divided at the apex*, forming a shorter, broader, medial lobelet, and slender, styliform, lateral lobes.

	Male.
Length of body	28 mm.
Length of pronotum	3·5 "
Length of elytra	32 "
Length of hind femora	9·5 "

Habitat.—Cootanoorina, interior of South Australia, where it was captured by Mr. R. Helms in June, 1891 (Coll. S.A. Mus.).

NEANIUS, *Brunner* (Mon., 373, fig. 45).

Body subapterous. Head large, as wide as pronotum. Vertex rounded, fastigium about twice as wide as first antennal joint. Pronotum smooth, shinning, anterior angles rounded, hindmargin subemarginate. Elytra and wings rudimentary. Hind femora below with numerous spines. Fore tibiæ below with four spinelets on each side. Abdomen with ninth segment of male hood-like. Subgenital lamina of same transverse, middle lobe narrowly produced, lateral styles free. Ovipositor slender, slightly incurved. Species Australian and Asiatic.

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NEANIUS LOBATUS, *Br.* (ibid).

"Testaceous. Face pale. Elytra with lobes rather broad, reaching to the hindmargin of the metanotum. Subgenital lamina of male broad, middle lobe narrow, dilated and bilobed at the apex.

	Male.
Length of body	17 mm.
Length of pronotum	5 "
Length of elytra	3·6 "
Length of hind femora	12 "

Habitat.—New Guinea."

The only other species known, *N. squamosus*, inhabits Ceylon.

EONIUS, *gen. nov.*

Subapterous. Head much wider than pronotum, occiput elevated, vertex rounded. Fastigium broad, apical part keeled. Antennæ twice longer (more or less) than the body. Pronotum smooth, shining; anterior angles rounded; hindmargin slightly concave. Elytra and wings very rudimentary. Fore and middle tibiæ below with three pairs of large spinelets, and one or two pairs of smaller apical spinelets. Hind femora below spinulose. Hind tibiæ above flat, and usually armed with four spinelets. Ovipositor slender straight, apex straight above, acuminate from below, acute.

The genus appears to be allied partly to *Neanius*, and partly to *Apotrechus*, but differs from the former in the very large head, broad fastigium, and long straight ovipositor, and from the latter in having rudimentary elytra, the pronotum wider behind, the hind tibiæ flat above, and the ovipositor being longer than the body. Its place in the system is indicated by the following synopsis:—

5. Elytra rudimentary, lobelike. Fore tibiæ with four pairs of spines.
   6. Size small. Occiput slightly elevated. Lobes angular. Antennæ long. Hind femora with numerous spines. Hind tibiæ with four spines on each margin. Ovipositor shorter than the body *Neanius.*
   6.6. Size large. Occiput much elevated. Lobes rounded. Antennæ short. Hind femora with two to three spines on each side. Hind tibiæ with four spines usually on each side. Ovipositor as long or longer than body. *Eonius.*

EONIUS TIGRINUS, *spec. nov.*

Size large. Yellow to testaceous, banded with black. Head oval from front view. Face black or piceous, almost smooth,

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shining, with numerous fine oblique and irregularly transverse lines visible only with a lens. Frontal fastigium hexagonal, bounded below by an elbowed (paler or darker) impression and a straight line. Ocelliform spot round or oval, whitish. Clypeus subtransverse, lower part brownish. Labrum large, almost round, brownish. Fastigium of vertex about twice the width, or more, of first antennal joint, depressed, carinate in front, elevated and rounded above, deep castaneous with indistinct, pale, medial line. Antennæ less than twice the length of body, very slender, pale. Pronotum convex in front, concave behind, fore and hind margins black, lobes callous, almost as high as long, angles much rounded, inferior margin straight. Elytra and wings quite rudimentary. Hind femora with two to three spinelets on each margin below. Hind tibiæ above with *four spinelets on each margin*. Legs and tarsi of body-colour. Abdominal segments posteriorly bordered with deep brown or blackish. Cerci of female short. Ovipositor long, shining, yellow, apex black. Subgenital lamina transverse, very short, entire. One adult and one female nymph.

	Female—Adult.	Nymph.
Length of body	41 mm.	27 mm.
Length of pronotum ...	6·5 "	5 "
Length of elytra... ...	2 "	1·5 "
Length of hind femora ...	15 "	15 "
Length of ovipositor ...	45 "	20 "

Habitat.—Mannanarie, Northern District of South Australia. (*Driffield*, in collection of S.A. Museum).

The adult specimen was reported to have been captured in an uninhabited hut; the nymph is a spirit specimen, dried and much distorted, from an unrecorded locality, but most probably from the Far North of this province. The eggs taken from the specimen are elongate elliptical, nearly white, and 5 mm. long. About 22 were secured.

Eonius atrifrons, *spec. nov.*

Size moderate. Testaceous. Head oblong-oval from front view, of body-colour except a *patch of deep shining black, round, outline undefined*, occupying the greater part of the face, including the bases of the antennæ, apex of fastigium and upper part of clypeus. Ocelliform spot small, oval. Pronotum with fore and hind margins black. Abdominal segments broadly black behind. Legs short, pale, concolorous. Hind femora below with five to six internal and four to five external spinelets. Hind tibiæ above with *six internal and three internal spinelets.*

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	Female.
Length of body...	24 mm.
Length of pronotum	6 "
Length of elytra	2·5 "
Length of hind femora	14 "
Length of ovipositor	15 "

Habitat.—Leigh Creek, Far North of South Australia (Coll. S.A. Museum.)

EONIUS FUMATUS, *spec. nov.*

Size moderate, Smoky-brown, indistinctly banded. Head small. Vertex low, *dark brownish*. Face, bases of antennæ, and legs pale. Ocelliform spot obsolete. Pronotum with hind margin only blackish. Legs slender. Fore tibiæ below with five spines on each side. Hind femora below with three slender spinelets on each side. Hind tibiæ flat above, with six external and four internal spinelets. Ovipositor moderately incurved, apex acute. Subgenital lamina of female broad, semi-circular, entire, with a narrow, deep black band near its posterior margin.

	Female.
Length of body	23 mm.
Length of pronotum	5 "
Length of elytra	3 "
Length of hind femora	14 "
Length of ovipositor	32 "

Habitat.—Kingston, South-Eastern part of South Australia (*D. Redman*, in collection of S. A. Museum).

EREMUS, *Brunner* (Mon., 374, fig. 46).

"Size mostly small. Wingless. Head large, usually as wide as the pronotum. Fastigium of vertex wider than the first antennal joint. Hind femora spined below, rarely unarmed. Fore tibiæ below armed with four rather large spines. Abdomen of male with ninth segment produced or hood-like. Subgenital lamina of male broad, with free styles. Ovipositor variable in length, acuminate or obtuse.

Habitat.—Asia, Africa, and Australia; 12 species known."

EREMUS SPINULOSUS, *Br.* (ibid, 377).

"Size large. Pale testaceous, ferruginous above. Head very large, shiningly ferruginous, occiput pale or infuscate. Pronotum unmarked. Hind femora below with very small crowded spinelets on both sides.

	Male.	Female.
Length of body	36 mm.	39 mm.
Length of pronotum ...	7·5 "	7·7 "
Length of hind femora ...	17 "	18·5 "
Length of ovipositor ...	—	18·5 "

Habitat.—Fiji Islands"

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EREMUS MUELLERI, *Br.* (Man., 378).

"Size small. Testaceous, head brownish. Pronotum w
the lobes scarcely deflected, angles obtuse. Hind femora bel
with four external and three internal (smaller) spinelets. Hi
tibiæ above with five very small spinelets on both margins.

	Female.
Length of body...	14 mm.
Length of pronotum	3·8 "
Length of hind femora...	9 "
Length of ovipositor	8 "

Habitat.—Queensland."

EPACRA, *Brunner* (Mon., 381, fig. 48).

"Habit of *Gryllacris*. Head elongate from front view. F
tigium of vertex rather narrower than first antennal joint. E
large, reniform. Antennæ very long. Elytra and wings v
large, straw-coloured, as well as the veins, hyaline. Pronot
truncate in front and behind, with deep sulci; meso- and me
notum acute or lobed. Hind femora slender, armed below w
more or less stout spines. Hind tibiæ above with seven spinel
on each margin. Ovipositor long, scarcely incurved. Limited
Australia."

EPACRA AENEA, *Br.* (ibid, 382).

"Straw-coloured ferruginous, face brassy black. Fastigi
with raised, keel-like margins, Antennæ, knees, clypeus, a
palpi ferruginous. Meso- and meta-sternal lobes triangul
acuminate. Hind femora below with four strong black spi
towards the apex, and four small ones towards the base inte
ally, and six strong spines externally.

	Male.	Female.
Length of body	29 mm.	29 mm.
Length of pronotum ...	6 "	6 "
Length of elytra	44 "	48 "
Length of hind femora ...	16 "	18 "
Length of ovipositor ...	— "	21 "

Habitat.—Rockhampton, Cape York, Queensland."

EPACRA MODESTA, *Br.* (ibid).

"Face brownish, labrum straw-coloured. Pronotum not strip
Meso- and meta-sternal lobes acute, rotundate. Tibiæ brown
at the base. Hind femora below with very small spinelets (f
to five on external margin). Ovipositor nearly straight, a
acuminate.

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	Female.
Length of body	32 mm.
Length of pronotum	5·8 "
Length of elytra	44 "
Length of hind femora...	14 "
Length of ovipositor	19 "

Habitat.—Cape York, Queensland."

APOTRECHUS, *Brunner* (Mon., 383, fig. 49).

"Size large. Wingless. Head much wider than pronotum; occiput rounded, elevated. Fastigium very broad. Eyes small. Pronotum wider in front than behind, anterior angles produced. Hind femora slender, scarcely armed below. Fore and middle tibiæ below with three to four spines. Hind tibiæ terete, smooth, or nearly so. Abdomen of male with ninth dorsal segment produced, hood-like. Subgenital lamina of male transverse, without styles. Ovipositor short, stout, incurved. *Gryllacris*, Erichson, Gerstaecker."

APOTRECHUS AMBULANS, *Erichson* (ibid).

"Size *moderate*. Testaceous. Disk of pronotum and succeeding segments dark reddish-brown, excepting the hind margin. Head testaceous above, a large part of face brownish, ocelliform spots pale yellow, medial one nearly round. Thoracic segments with a continuous yellow medial line. Hind femora below with two to three short spines on each side. Hind tibiæ wholly unarmed, terete. Ovipositor stout, *longer than hind femora*, slightly incurved, obtusely acuminate.

	Male.	Female.
Length of body	22 mm.	29 mm.
Length of ovipositor ...	—	17 "

Habitat.—Tasmania."

APOTRECHUS UNICOLOR, *Br.* (ibid, 140).

"Size *small*. Testaceously ferruginous. Face brownish, rough, with horizontal folds, ocelliform spots absent. Pronotum ferruginous, disk uneven. Hind femora below with two spines towards apex. Hind tibiæ flat below. Ovipositor very short, scarcely extending beyond the cerci, acuminate.

	Male.	Female.
Length of body	35 mm.	42 mm.
Length of pronotum ...	7 "	8 "
Length of hind femora ...	14 "	17·5 "
Length of ovipositor ...	—	5 "

Habitat.—Port Denison, N.S. Wales."

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Apteronomus, *gen. nov.*

Size small. Wingless, or wings scale-like. Head moderately large, not much wider than pronotum; occiput rounded. Fastigium nearly twice as wide as first antennal joint, vertex depressed, carinate. Pronotum equally as wide in front as behind, lobes rounded. Eyes small, elliptical. Hind femora with very small spinelets. Fore tibiæ below with five spines on each side. Hind tibiæ flattened, spinelets very minute. Abdomen of male with ninth dorsal segment rather short; supra-anal and subgenital laminæ prominent, latter narrow, acutely triangular, deeply cleft. Styles distinct.

The following synopsis will indicate the place in the system occupied by this genus:—

4.4. Body wingless, or lobes quite rudimentary. Head broader than pronotum. Occiput elevated.

5. Size large. Head much wider than pronotum. Fastigium very broad, subrotundate. Fore tibiæ below with three to four spines on each side. Abdomen of male with ninth dorsal segment produced, hood-like. *Apotrechus.*

5.5. Size small. Head not much wider than pronotum. Fastigium rather narrow, depressed in front, keeled. Fore tibiæ below with five pairs of spines. Abdomen of male with ninth dorsal segment short, not hood-like. *Apteronomus.*

Apteronomus Bordaensis, *spec. nov.*

Testaceously-brown, banded indistinctly darker. Head pale, face almost concolorous. Ocelliform spot pale testaceous, partly bordered with brown, with two pale spots below apex of fastigium. Clypeus trapezoidal, quadrangular, narrower below, as wide above as high. Labrum elongate-oval, ferruginous. Fastigium of vertex narrow, widely separated from the antennæ, margins angular, parallel, scarcely keeled, without lateral pale marks, apex semicircular, dark-brown. Antennæ concolorous, three times the length of body. Pronotum rounded above, shiningly smooth, fore margin convex and raised, hind margin concave; lobes nearly as high as long, angles much rounded, margins narrowly incurved. Hind femora below with five internal and two to four external minute spinelets. Hind tibiæ flattened above, with five internal and four to five external spinelets. All the legs (also the antennæ) closely covered with short tomentum. Subgenital lamina of male narrowly triangular, deeply cleft, lateral lobes none.

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	Male.
Length of body	14–16 mm.
Length of pronotum...	2·5– 3 "
Length of hind femora	15 "

Habitat.—Western extremity of Kangaroo Island, near Cape Borda, where two males were captured by myself at the end of February, 1886, and were found under the loosely adhering bark of the trunk of Eucalypts in moist situations. A third specimen resembling the above two in most characters, but exhibits minute scale-like wing-lobes, is for the present included. Its face is marked with a broad blackish-brown band, and the hind femora are wholly unarmed. Collection of S. A. Museum.

AMETRUS, *Brunner* (Mon., 384, fig. 50).

"Head with occuput elevated. Fastigium of vertex three times wider than first antennal joint. Antennæ short, slender. Face broad, rounded, Pronotum short, anterior angles obtuse, hindmargin obtusely and triangularly emarginate, transverse furrows deeply impressed. Elytra and wings rudimentary, lobe-like and lateral. Fore coxæ much compressed, spined. Hind femora below with internal margin wholly and external partly spined. Fore and middle tibiæ below with two spines on each side. Hind tibiæ long, very thick, terete, above with six spines on each side, those on the inner side being the longer ones. Tarsi very short. Abdomen of male with ninth dorsal segment hood-like, short, inferior margin triangularly emarginate. Cerci very short. Subgenital lamina quadrate, medial lobe obtuse, produced, lateral lobes accuminate, styles none.

AMETRUS TIBIALIS, *Br.* (ibid).

"Size moderate. Uniformly ferruginous.

	Male.
Length of body...	29 mm.
Length of pronotum	5·2 "
Length of elytra	? "
Length of hind femora...	14·7 "
Length of hind tibiæ	16 "

Habitat.—Melbourne, Victoria."

AMETROSOMUS, *gen. nov.*

Head with occiput elevated, maxillary palpi very long, filiform. Antennæ about three times the length of the body. Fastigium of vertex scarcely twice as wide as first antennal joint, apex depressed, margins keeled. Eyes large, reniform. Pronotum short, anterior margin raised, disk with a distinct suborbicular callosity on each side, angles much rounded, hindmargin almost

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flat, broadly and triangularly emarginate; posterior lateral callosities large, oval; lobes high, inferior margin subemarginate, posterior angles truncate. Elytra and wings lobelike, very narrow. Anterior coxæ subquadrangular, unarmed. Fore and middle legs much compressed, with five spines on each margin. Hind femora below with three to six internal and three to eight external minute spinelets (being different on the right and left side of the same specimen). Hind tibiæ slender, flattened above, with nine to ten internal and five to seven external, very minute spinelets. Ovipositor very short, much incurved, apex obtuse, rounded. Subgenital lamina of female broadly transverse, very short, entire, posterior margin subsemicircular.

The insect has the aspect of *Ametrus*, Br., but is quite different in many points, as shown by the following synopsis, which, at the same time, indicates the place of the genus in the system. The numbers refer to those in Brunner's Monograph, 1888.

3.3. Hind tibiæ spined. Tarsi very short. Elytra and wings lobelike.

4. Hind tibiæ much incrassated. Fastigium of vertex broad. Antennæ short. Fore and middle tibiæ below with two-three spines on each side. *Ametrus.*

4.4. Hind tibiæ slender. Fastigium narrow. Antennæ long. Fore and middle tibiæ with five spinelets on each side. *Ametresomus.*

AMETROSOMUS HELMSI, *spec. nov.*

Size moderate. Colour brownish, with dark brown bands. Face pale. Ocelliform spot circular, cream-coloured. Clypeus subsemicircular. Legs slender, pale. Two specimens.

	Female.
Length of body	27 mm.
Length of pronotum	5 "
Length of elytra	2 "
Length of hind femora	14–16 "
Length of ovipositor	3·5 "

Habitat.—Blyth Hills and Barrow Range, Central Australia, captured by Mr. R. Helms (Coll. S.A. Mus.).

B. STENOPELMATIDÆ.

The STENOPELMATIDÆ differ from all other Locustodea in the form of the tarsi, these being *compressed* instead of depressed, and the first and second joints do not possess any lateral lobes, so greatly developed in the Gryllacrids. Another character serves to separate them into two main groups, viz., the presence or absence of pulvilli (cushions) on the underside of the tarsi, the an-

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terior and posterior one possessing one, and the metatarsus two. Intimately connected with this character is another observable in the structure of the base of the hind femora. In all those species which are furnished with pulvilli the hind femora are jointed to the coxæ by an intruding angle plainly visible from the *outside*, but in those without pulvilli the base of the femora is rounded and the angle only seen from the inside.

A second most important distinction consists in the presence or absence of foramina, or auditory organs, of the fore tibiæ, which, when present, are always open on both sides, except in one of the new genera, where they are quite rudimentary.

The form, arrangement, and number of the spines of the legs provide also excellent characteristics within certain limits, but being variable, sometimes not only in the various individuals but even on the right and left sides of the same insect, cannot be considered as of decisive value alone.

The genital characters are very peculiar, and sometimes of extravagant forms, baffling adequate description in words.

The ovipositor is usually of the normal structure among the members of the tribe, and affords good specific distinctions in some cases.

The fastigium of the vertex is also very useful in diagnosing. It merges either gradually into the face without distinct demarcation, or is set off more or less distinctly. Its width and markings are also important as specific distinctions.

The antennæ and mouth parts are unsuited for systematic use, notwithstanding their great, and sometimes enormous, development; being mostly of a very uniform or variable type.

The form, etc., of the clypeus and labrum, appear to deserve considerable attention.

The pectus or chest is either very narrow or very broad and flat (in rare cases), but offers little or nothing feasible to base good distinctions upon.

Organs of flight are mostly absent, but when present they resemble those of crickets to a great extent in their structure.

The presence of auditory organs in part of the family naturally suggests the possession of corresponding organs for producing sounds. These are, apparently, to be sought for in the roughened surfaces of some of the basal segments of the abdomen. Several varieties of structure have been observed.

The habits of these insects, being extremely retired and wholly nocturnal, are little known. All of the cave-inhabiting Orthoptera belong to this family, and in some cases it has been observed that the eyes have become atrophied or wholly obsolete. Other species live in burrows under stones, logs of wood, or under loose bark and in hollows of trees. On account of their formid-

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able mandibles they can inflict painful bites, and are not pleasant to encounter incautiously. Their food consisting mainly, if not entirely, of self-caught insects, they must be regarded as being more or less beneficial to man, and not hurtful.

Owing to the paucity of material, most probably due to the rarity of representatives of the family, I shall content myself for the present by offering only a synoptical key, collated principally from that of Brunner van Wattenwyl in his monograph of 1888, and descriptions of three new species belonging to two new genera.

SYNOPSIS OF AUSTRALIAN AND POLYNESIAN STENOPELMATIDÆ.

1. Tarsi with pulvilli, metatarsus with two. Angle of insertion of hind femora visible laterally from outside. SECTION A.

2. Anterior margin of pronotum straight or rounded, without submarginal furrow. Fastigium of vertex separate from frontal, more or less produced between the antennæ. Anterior coxæ armed with a spine. Middle tibiæ below spinulose.

3. Fore tibiæ with foramina on both sides, or rarely on the internal margin. (One Madagascar genus, *Hypocophus*, only). ANASTOSTOMATÆ.

4. Hind tibiæ flattened above, with three to four spines (dilated at the base) on each side. Fore tibiæ smooth above. Wingless. DEINACRIDA, *White* (*Br.* Mon., 268, fig. 5).

a. Pronotum shining. Hind femora always with some apical spines on each margin. Middle tibiæ above unarmed, excepting the apical spines. Hind tibiæ with a fixed small spur.

b. Pronotum lurid, striped with brown. Abdomen chestnut-coloured. Cerci of male somewhat terete. Hind tibiæ with three spines on the external margin besides the apical ones. New Zealand. *D. thoracica*, White.

bb. Pronotum brown. Abdomen lurid, each segment banded brown at base and apex. Cerci of male depressed. Hind tibiæ externally with four spines besides the apical. New Zealand. *D. ligata*, Brunner.

aa. Pronotum very rough. Hind femora spined on both sides. Middle tibiæ above with two spines on external margin, besides apical. Hind tibiæ with large articulately inserted spurs. New Zealand. *D. heteracantha*, White.

4.4. Hind tibiæ above rounded with numerous spines, not dilated.

5. Vertex compressed (seen from above). Fastigium not so wide as first antennal joint, sulcate. Occiput rounded, not carinate. Pronotum truncate behind. Fore tibiæ above flat or terete. Tarsi without arolia between the claws. Femoral knee-lobes all spined. ANASTOOTOMA, *Gray* (*Br.* Mon., 270, fig. 6).

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a. Size large. Colour chestnut, dusky. Femora all spined below. Hind femora roughly granulated all over. Queensland. New Zealand, New South Wales. *A. Australasiæ*, Gray.

aa. Size small. Reddish piceous. Fore and middle femora below unarmed, or nearly so. Hind femora spined above.

b. Colour bright. Hind tibiæ above with seven spines on each side. Ovipositor scarcely exceeding the cerci. Queensland, New South Wales. *A. erinaceus*, Burmeister.

bb. Colour dull. Hind tibiæ above with eight to nine spines. Ovipositor scarcely shorter than hind femora. Queensland. *A. opacum*, Brunner.

5.5. Vertex flat (seen from above). Fastigium as wide or wider than the first antennal joint, not sulcate, flat, of equal width throughout or contracted towards the apex, contiguous with the frontal in a line, not produced.

6. Subgenital lamina of male transverse, styles flat.

7. Fore tibiæ with internal margin bispinose above. Wingless.

8. Head of male as broad as pronotum, mandibles extremely large. Fastigium depressed, not narrowed at the apex, contiguous with the frontal in a line.

CARCINOPSIS, *Br.* (Mon., 275, fig. 9).

a. Wingless. Hind tibiæ with first and second internal spurs short, subequal in length. Australian species.

b. Legs concolorous. Vertex high. Fastigium not as wide as first antennal joint. New Caledonia. *C. unicolor*, Brunner.

bb. Femora and tibiæ banded brown towards the apex. Vertex depressed. Fastigium wider than the first antennal joint. New Caledonia. *C. signata*, Brunner.

aa. Winged species. India; not Australian.

8.8. Head never as wide as pronotum, mandibles normal. Fastigium contracted at the apex, acuminate, contiguous with the frontal. AISTUS, *Brunner* (Mon., 278, fig. 10).

Monotypic. Size small, chestnut-coloured, shining. *A. gracilis*, Br.

6.6. Subgenital lamina of male elongate, styles narrow.

7.7. Fore tibiæ above terete, internal margin below with three to five spines. Hind tibiæ shortly spinulose. Second spur as long or longer than the first.

8. Fore tibiæ with foramina on both sides. Second internal spur of hind tibiæ scarcely as long as the first. Australian species.

9. Foramina distinct. Hind femora extending much beyond the body. Fore tibiæ with three spines on the internal margin.

TRIHOPLOPHORA, *Br.* (Mon., 280, fig. 13).

Monotypic. Piceous, sides and underside pale. Face pale, marbled with piceous. Eastern Australia. *T. abnormis*, Brunner.

9.9. Foramina rudimentary. Hind femora scarcely exceeding the body. Fore tibiæ with five spines on the internal margin.

PENTHOPLOPHORA, *Tepper*.

Monotypic. Yellowish testaceous. Pronotum and abdomen banded black. Central Australia. *P. Driffieldi*, Tepper.

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8.8. Foramina on internal margin only. Madagascar genus.

33. Fore tibiæ without foramina. MIMNERMI.

4. Fastigium rounded or flattened, not sulcate. Hind tibiæ slender, with short spines. (Elytra abbreviated). Five African genera.

4.4. Fastigium deflexed between the antennæ, compressed, sulcate. Hind tibiæ stout, above with strong spines. Australian and American genera.

5. Head not wider than pronotum. Fastigium not as wide as first antennal joint. Hind tibiæ above with two spines on internal margin. Lobes of pronotum very low, angular. American species. CRATOMELUS, *Brunner* (ibid, fig. 24).

5.5. Head wider than pronotum. Fastigium about four times as wide as first antennal joint. Lobes of pronotum high, rounded. Hind tibiæ above not spined. Australian species.

PACHYPODAGRUS, *Tepper*.

a. Size large. Brownish ferruginous, banded with brown. Hind femora below with 12 internal and four to six external spines. Ovipositor long. *P. crassipes*, Tepper.

aa. Size moderate. Greyish-testaceous, concolorous. Hind femora below with six internal and no external spines. Ovipositor short. *P. Magareyi*, Tepper.

2.2. Pronotum wider in front, narrower behind, fore margin sinuous, intramarginal furrow distinct, &c. Extra-Australian genera. STENOPELMATUS, &c.

1.1. Tarsi without pulvilli (except one American genus, *Gammarotettix*, with one pulvillus on the metatarsus), very much compressed. Angle of insertion of the base of the hind femora visible only on the *inner* side. Bases of antennæ approximate. Fore tibiæ without foramina. SECTION *B*.

2. Fore and middle femora with movable spines at the apex. Hind tibiæ above with crowded spines of equal length, below terete and unarmed. Asiatic and Australian species.

RAPHIDOPHORÆ.

3. Fore femora with a movable, rather large spine on the inner side at the apex. Malayan and Australian species.

RAPHIDOPHORA, *Serville* (Br. Mon., 294, fig. 25).

a. Hind metatarsus above unarmed and smooth (except apical spine). Spines of the knees of the anterior femora long. Hind femora below spined on the inner margin. Antennæ stout. Australia. *R. crassicornis*, Brunner.

a. Hind metatarsus above hirsute and spined. Abdomen with seventh dorsal segment obtusely produced. New Guinea. *R. foeda*, Brunner.

3.3. Fore femora with small spines on both sides of the apex. Eyes very prominent seen from above. First spur on internal margin much shorter than the metatarsus.

NEONETUS, *Br.* (Mon., 300, fig. 27).

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Size very small. Testaceous, variegated with brownish. Monotypic. New Zealand. *N. variegatus*, Brunner.

2.2. Fore and middle femora unarmed at the apex, or with only a few spinelets. European, American and Australian genera.

3. Hind tibiæ above with one of the spinelets usually remote from the others, which are crowded, below terete, rarely spined. DOLICHOPODÆ.

4. Antennæ slender. Styles absent. European species.

4.4. Antennæ incrassated, contiguous at the base. Subgenital lamina of male lanceolate, styles present. New Zealand species. PACHYRHAMMA, *Br.* (Mon., 301, fig. 29).

a. Fore femora below unarmed, hind ones very narrowed, about one and a half times the length of the body. *P. Edwardsi*, Scudder.

aa. Fore femora below with three or four small spinelets on the anterior margin. Hind femora scarcely longer than the body, base incrassated. *P. Nova-zealandiæ*, Br.

3.3. Hind tibiæ above with most of the spines remote from each other, also the spinelets small or tooth-like rarely crowded. One European, five American, and one Australian genus. CEUTEPHILI.

4. Hind tibiæ below with crowded spinelets, sulcate. Europe. TROGLOPHILUS, *Krauss.*

4.4. Hind tibiæ below with distant spinelets, terete. All American and Australian species.

5. Hind tarsi above with first and second joints hirsute or with two rows of spinelets. Antennæ fasciculately pilose beyond the middle. American genus. HETEROMALLUS, *Br.* (Mon., fig. 35).

5.5. Hind tarsi above with first and second joints unarmed or shining, except the apex of the latter. New Zealand. TALITROPIS, *Bollen* (Br., Mon., 312, fig. 36).

Monotypic. Shiningly ferruginous. Rather small. *T. Sedilloti*, Bollen.

PENTHOPLOPHORA,* *gen. nov.*

Head elongate. Vertex produced beyond the eyes. Fastigium rounded, narrow towards the apex. Medial ocelliform spot, minute, annular, indistinct, *lateral spots absent.* Antennæ scarcely *one and a half times* the length of the body. Eyes large, reniform, depressed. Face flat. Clypeus transverse. Labrum obovate, longer than wide, base stout. Mandibles covered. Palpi very slender. Pronotum rounded, lobes higher than long, highest behind, inferior sub-semicircular. Fore coxæ

* Five-armed.

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very stout, spined. Femora sulcate below. Hind femora much dilated at the base, not longer than the body. Foramina of fore tibiæ *quite rudimentary* (notably posteriorly), terete above, below *with five spines on each margin*. Hind tibiæ above with two long terminal spurs inside, and with four short ones externally, also below one on each side. Abdomen stout, cylindrical, segments not granulose. Cerci of female very slender, shorter than supra-anal lamina. Subanal valves elongate-oval. Ovipositor slender, gradually incurved, acuminate from below, apex very acute. Subgenital lamina broad, nearly semicircular.

The large insect, for whose reception the genus is established, differs too much from all others to admit of its inclusion in *Trihoplophora*, its nearest ally, as will be seen by inspecting the synoptical key.

PENTHOPLOPHORA DRIFFIELDI, *spec. nov.*

Size large. Yellowish testaceous. Head concolorous, except a small blackish spot on each external superior angle of clypeus. Eyes black. Pronotum with anterior and posterior margins broadly black. Abdominal segments banded blackish.

	Female.
Length of body	35 mm.
Length of pronotum	6·5 "
Length of hind femora	16 "
Length of ovipositor	37 "

Habitat.—Angebuckina in the Far North of South Australia, whence this remarkable insect was brought by my friend, the late C. E. Driffield, to whose memory it is dedicated. Collection S.A. Museum.

The rudimentary foramina render this species very interesting, connecting those species without them directly with the others which possess them in a perfect form. On the anterior side they are tolerably distinct, although small, and denoted by brownish shading, but on the opposite side are only indicated by a minute impression.

PACHYPODAGRUS,* *gen. nov.*

Head distinctly wider than pronotum, oval. Occiput elevated. Vertex declined. Fastigium rounded, slightly sulcate, three to four times wider than the first antennal joint. Medial ocelliform spot small, circular, not very distinct, lateral ones inconspicuous or absent. Antennæ very slender, not much longer than the body. Eyes large, *elliptical*, depressed. Pronotum cylindrical, sulci deep, lobes high, inferior margin semicircular. Elytra ab-

* Thick-gouty.

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breviate, veins distinct. Wings scale-like. Mesosternal lobes short broad, metasternal large rounded. Femora all sulcate below. Hind femora incrassated, pinnate striæ biserial and indistinct, upper margins smooth, lower margins spined. Fore tibiæ stout, above terete, spineless, without foramina, below with four to five external and three internal spinelets. Hind tibiæ *very much incrassated*, terete and smooth at the base, then suddenly thickened, above slightly flattened with numerous spines, some of them being connected by low transverse ridges. First external spur with two small ones at its base, second of equal length. Pulvilli of tarsi small, those of first joint elongated. Abdomen with eighth dorsal segment of male produced, medially divided at the apex into two broad triangular lobes. Cerci short, terete, hirsute. Subgenital lamina of male short, divided into three lobes, the middle one narrow, thick and long, apex obtuse; lateral lobes in the form of low tubercles. Ovipositor nearly straight, apex bluntly acuminate.

The genus appears to me much more nearly related to the American *Cratomelus* than to the geographically nearer Asiatic members of the tribe. The differences are indicated in the synopsis.

PACHYPODAGRUS CRASSIPES, *spec. nov.*

Size large. Brownish ferruginous, banded with brown. Legs pale, spines and claws tipped with black. Ocelliform spot small, circular, indistinct. Hind femora below with 12 internal and four to six external spinelets. Hind tibiæ very stout, above with six spinelets on each margin, besides the apical spurs. Ovipositor straight, very long. Two males, one female.

	Male.	Female.
Length of body ...	25 –30 mm.	30 mm.
Length of pronotum...	6 "	7·5 "
Length of elytra ...	3·5– 5 "	6 "
Length of hind femora	17 "	18 "
Length of ovipositor	—	47 "

Habitat.—Oladdie, South Australia *(McGregor)*; Silverton, New South Wales *(F. A. Fiveash)*; Northern Territory of South Australia *(Hon. S. J. Magarey, M.B.)*; (Collection of S.A. Museum). The smaller male had been preserved originally in spirit, then dried, the body is therefore in a considerably shrunken condition; the other specimens were simply dried, which may account for the difference in dimensions.

PACHYPODAGRUS MAGAREYI, *spec. nov.*

Size moderate. Greyish-testaceous, concolorous. Clypeus quadrangular, transverse, lower margin distinctly sulcate, about

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one-third less in width than the upper. Mandibles blackish, almost embracing the labrum. Fore and middle tibiæ with four external and three internal spines. Hind femora with six spinelets on the inner margin, the outer being unarmed. Hind tibiæ moderately stout, with six spinelets on each margin. Ovipositor short, slightly incurred.

	Female.
Length of body	27 mm.
Length of pronotum	5 "
Length of elytra	2 "
Length of hind femora	14 "
Length of ovipositor	23 "

Habitat.—Northern Territory of South Australia.

The species is dedicated to Dr. S. J. Magarey, M.L.C., who presented it in 1886, with a number of other insects, to the S.A. Museum.

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On the Cambrian Rocks at Curramulka.

By G. B. Pritchard.

(Communicated by Professor Tate.)

[Read November 3, 1891.]

This paper is the outcome of a trip to Curramulka for the purpose of obtaining information with regard to the Cambrian rocks which were recently discovered at this locality.

Curramulka is one of the hundreds on the eastern side of Yorke Peninsula, and the township of the same name lies about twelve miles to the north-west of Port Vincent, at about the lowest part of a basin-shaped hollow; and it is in and around this township that the formation in question occurs.

This area is coloured, to indicate that the rocks belong to the metamorphic series of Silurian age, by Mr. H. Y. L. Brown, in his sketch map of geology of South Australia; but recently Mr. A. W. Fletcher, B.Sc. (Proc. Roy. Soc. S.A., vol. XIII., part II., p. 249), proved that they were fossiliferous, and from the material he brought to light they were seen undoubtedly to belong to the Cambrian, thus adding another locality for fossils of this age.

The whole of the country between Port Vincent and Curramulka to within a mile of the latter place is covered by several feet of travertine, the wells and tanks showing this deposit to be from about seven to ten feet in thickness.

Eocene.

Deposits of Eocene age are met with at the coast, where they are exposed in, for the most part, low-lying cliffs along the western shores of St. Vincent's Gulf, from near Black Point to Edithburgh to the south, a distance of about 32 miles, without a break. The rock in the neighbourhood of Port Vincent and Stansbury consists of a yellowish polyzoal limestone containing echinoderms, brachiopods, and a few lamellibranchs, and bears a strong resemblance, not only lithologically, but also in the character of its contents, to the polyzoal limestones at Aldinga; and at Waurn Ponds and the Moorabool Valley, in Victoria. How far the Eocene extends inland I cannot say, as in no place along the route I took was the travertine cover removed to expose the underlying rock. The following is a list of the species which have been obtained from this coast, and it will be readily seen that these beds belong to the same horizon as those just mentioned :—

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ECHINODERMATA.

Cidaris (spines and plates).
Echinus Woodsii, *Laube.*
Paradoxechinus novus, *Laube.*
Holaster Australiæ, *Duncan.*
Fibularia gregata, *Tate.*
Scutellina patella, *Tate.*
Monostychia deltoidalis, *Tate, m.s.*
Maretia anomala, *Duncan.*
Eupatagus, two sp.
Lovenia Forbesi, *T.-Woods.*

BRACHIOPODA.

Terebratula (?) bulbosa, *Tate.*
Waldheimia furcata, *Tate.*
Waldheimia sufflata, *Tate.*
Waldheima Vincentiana, *Tate.*
Waldheimia Tatei, *T.-Woods.*
Terebratella Tepperi, *Tate.*
Terebratulina Scoulari, *Tate.*
Terebratulina lenticularis, *Tate.*
Magasella compta, *Sowerby.*
Magasella deformis, *Tate.*
Rhychonella squamosa, *Hutton.*

LAMELLIBRANCHIATA.

Pecten Eyrei, *Tate.*
Spondylus gaderopoides, *McCoy.*

CAMBRIAN.

The rock is a hard crystalline limestone, varying from flesh-colour and grey to blue. I did not obtain any fossils from either the flesh-coloured or grey limestone, the latter seeming more particularly to carry minerals, while the blue yielded the fossils. This variation in lithological character would seem to indicate the existence of three beds, and if such is the case their relations to one another have yet to be worked out.

Area.—The boundary of the outcrop which I actually traversed was as follows:—Eastwards for a distance of about two and a-half miles a road is met running north and south; the outcrop is lost to view on the brow of a slight elevation close to this road; following the boundary southwards it runs parallel to the road for about one and a-quarter miles, then turns to the right, and has a general westerly direction for two and a-half miles, crossing the Port Vincent-road at about a mile south of the township and the next road to the west at the same distance. The outcrop along this portion of the southern boundary is lost

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to view on the brow of the hills, which there form a part of the basin. Northwards, about one mile, the outcrop apparently disappears at a short distance from the cross roads, thence along the boundary westwards crossing the Minlaton road, which runs about south-west, at half-mile from the point just mentioned, thence through section 59 N., crossing the Mount Rat and Port Victoria-road at the boundary of sections 59 N. and 81.

So that filling in the remainder approximately I should estimate the area of actual outcrop at about ten square miles. That the limestone does occur at no great depth below the surface in the surrounding country is evidenced by the following facts:—To the east, in section 51 E., there is an opening somewhat below the general level of the surface which leads into a cave in the Cambrian limestone. About one-half mile further, in section 50, near the boundary fence, there is a well about 20 feet deep, which, after passing through the travertine, entered a yellow clay for some feet, and then angular fragments of the blue limestone. Also to the south, in section 34, the property of Mr. Talbot, a quarter-mile from the road, there is a very large cave in the same rock. It is comparatively easy to enter, and when some distance in the passages become very numerous, some of them just allowing a person to crawl along, and then suddenly they open out into large chambers. The walls in some parts have a slight incrustation of stalactitic material, but so far as I went there was nothing striking in this respect; the limestone forming the walls inside is very interesting from its peculiar nodular or concretionary appearance, which has, no doubt, been due to weathering action. The floors in some places have a covering of two feet or more of dust, which is full of bones; among the few obtained were the lower jaws and skulls of rats, lower jaws of an opossum, and numerous limb-bones of various small marsupials. The length of this cave is unknown; but it is said to extend for miles, though no one has yet reached the end of the passages. In section 37, the property of Mr. Bickers, about 100 yards from the road, there is a well, the depth of which is 120 feet. Below the travertine here is a yellowish sand, which was passed through for nearly the whole depth, and at the bottom a hard breccia was reached, which was made up of small angular fragments of the Cambrian limestone, held together by a matrix of brownish sand.

A well in the township gives us a depth of 140 feet. Only 40 feet of this was sunk when in search for water, as the first 100 feet was in a natural cave, and there has always been a constant supply of water in it.

A small outcrop of about half a mile square in extent is said to occur at about four miles south of Curramulka; but as I had not

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an opportunity of visiting the locality, I cannot speak definitely about it.

Caves in the same rock are also said to occur in the neighbourhood of Mount Rat, which lies about four miles to the north-west.

The fossil fauna of this locality contains *Conocephalites australis, Orthisina, sp. nov., Ophileta, sp. nov., Salterella, n. sp.*, and some other species, which are enumerated by Professor R. Tate in his paper on "The Cambrian Fossils of South Australia."

Minerals occur in the grey rock, but apparently only in small quantities. I obtained small specimens of the green and blue carbonates of copper, copper pyrites, galena, calcite, and fluorite.

Glaciated Rock Surfaces.

To the north of the township there are evidences which seem to be attributable to none other than glacial action, for the exposed surface of the rock is very flat and smooth, and in many places scratched and scored, the general direction of the striæ being north and south, and occasionally deep and smooth grooves are met with. I did not see any rocks of foreign material in this locality but numerous angular and subangular fragments of the hard limestone. At the coast, however, about one mile to the north of Port Vincent, there are several large boulders of a coarse granite, with large felspar crystals, which may have been carried there by glacial agency; but as I am informed that granite occurs *in situ* both to the north and south of this locality, the presence of these boulders may have been due to other causes.

In this connection I would draw attention to an appearance on the weathered surface of this limestone, which simulates very much glacial striæ. Upon breaking a fragment off the rock it is found to be due to a series of small veins of calcite being weathered at a faster rate than the matrix, this being a little below the level of the surface.

In conclusion, it might be interesting to mention that during the recent dry season many farmers have been sinking for water, and in some places a good supply has been obtained at a depth of from 7 to 12 or 14 feet, that is just below the travertine in a deep red loam which overlies the Cambrian limestone in places to a depth of a few feet.

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THE CAMBRIAN FOSSILS OF SOUTH AUSTRALIA.

By PROFESSOR R. TATE, F.G.S., F.L.S.

[Read September 6, 1892.]

Plate II.

The history of the discovery of Cambrian rocks in our Province is briefly and succinctly given by Mr. Etheridge (Trans. Roy. Soc. S. Aust., vol. XIII., p. 10, 1890) in an introduction to his paper descriptive of some corals obtained from this horizon. During the past two years additional palæontological discoveries have been made at Parara and Curramulka, on Yorke-Peninsula; and as a fairly representative fauna of the Lower Cambrian or Olenellus-zone has now been obtained; it is highly desirable that it should be publicly recorded. At least twenty-three determinable species have been elaborated; whilst various obscure fossils, whose zoological relations cannot be interpreted, represent some four or five additional ones.

The fossils are in an excellent condition, their tests being in all cases well preserved; but the absence of a bold outcrop, or face of stone, and the want of bedding planes in the rock reduce fossil-collecting to the level of the labourer who breaks stones for road-metal. The difficulty of obtaining complete specimens, or in relief on the stone, is obviously very great; whilst the intractable nature of the matrix does not permit of developing the fossils. The location of those genera, whose essential characters are internal, is guess-work, because in no instance have interior aspects or casts been obtained.

The following list contains all the definable elements of our Cambrian fauna. The note on the occurrence of *Hyalostelia* is by Mr. W. Howchin, F.G.S.

GASTROPODA.

Stenotheca rugosa, *Hall.* Plate ii., fig. 4.

Ref.—Walcott, American Jour. Sc., 1887, t. 1, fig. 11.

Stenotheca rugosa, var. paupera, Shaler and Foerste, Bull. Mus. Comp. Zool., 1888, p. 29, t. 1, fig. 9.

Stenotheca ? rugosa (Hall), Walcott, Tenth Annual Report U. States Geol. Surv., 1890, p. 617, t. 74, fig. 1.

All of the few examples of this species, obtained at Ardrossan, are referrable to the variety *paupera*.

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Ophileta subangulata, *spec nov.* Plate ii., figs. 8*a-b*.

Shell minute, concave above, smooth, composed of two rapidly increasing whorls, which are in contact but not embracing. The periphery of the last whorl is compressedly rounded, the upper surface slightly declining from it to about two-thirds the breadth, thence steeply sloping to the suture; this sudden change of slope simulates a keel in the anterior one-third of the whorl, producing a slight concave slope between it and the periphery. Base tumidly convex.

Dimensions.—Major and minor diameters, 3· and 1·5 respectively.

Locality. — Cambrian limestone at Parara, near Ardrossan (several examples).

The two species of *Ophileta*, figured by Etheridge, Proc. Roy. Soc., Tasmania, 1863, tab. 2, figs. 13, 14, from the Cambrian or "Caroline Creek beds" of the Mersey River District, Tasmania, are very different from the one here described.

Platyceras primævum, Billings, seen from above, as figured by Shaler and Foerste, Bull. Mus. Comp. Zool., 1888, p. 30, tab. 2, fig. 10, has the general outline of *Ophileta subangulata*, but the last whorl is "throughout evenly rounded," and moreover is devoid of the submedial angulation. Despite the similitude, I do not think the two species are congeneric.

Platyceras Etheridgei, *spec. nov.* Pl. ii., figs. 7*a-7c*.

Shell small, broadly conical; apex obtuse, posterior, recurved, but not spiral, usually protruding beyond the posterior margin; aperture roundly oval, but irregular in outline, subtruncated and narrowed posteriorly. Surface ornamented with rather thick subimbricating concentrie folds of growth, and curved beneath the apex coincidently with the posterior margin; faintly radially wrinkled.

This very common species exhibits considerable variability in the outline of the aperture, and the amount of backward projection of the apex. The shells seem to have lived on irregular surfaces, and in some instances at least upon trilobites.

Dimensions.—The proportionate measures of the basal diameter and height are as 4 to 3; the longest diameter observed is 6 mills.

Locality.—Curramulka, in Cambrian limestone.

The species is dedicated to Mr. R. Etheridge, junr., who has contributed so largely to the elaboration of the Cambrian fauna of Australia.

The irregularity of its margin and less-tumid sides distinguish *P. Etheridgei* from *P. Dawsoni*, Walcott.

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LAMELLIBRANCHIATA.

Ambonychia macroptera, *spec. nov.* Pl. ii., fig. 10.

Shell very small, obliquely triangular, sub-convex, umbones terminal; ornamented by numerous slender radial ridges about as wide as the alternating furrows; posterior margin medially subangulated.

Wing nearly as large as the valve, much expanded posteriorly, with a prominent fold or border on its ventral margin, separated however from the hinge-line by a deep suture; superior to the marginal fold the surface is broadly depressed, the dorsal margin is straight but ascending. The surface is marked by sigmoidal growth-folds, and the posterior margin is coincidently curvilinear.

Dimensions.—Oblique axis, 3·5; transverse axis, 2·5; width of wing at posterior end, 2·5; its oblique axis, 3 millimetres.

Locality.—Cambriam limestone at Curramulka (three examples).

PALLIOBRANCHIATA.

Orthisina compta, *spec. nov.* Pl. ii., figs. 6-6*a*.

Transversely subquadrilateral, equilateral; hinge nearly straight, not quite so long as the greatest width of the valve.

Dorsal (?) valve flatly convex with depressed anterior- and posterior-ventral areas, which are separated by a submarginal roundly elevated medial fold.

Surface marked by distant, broad undulations; in the umbonal area these have a rhomboid outline, but towards the front are medially incurved, coincident with the curvature of the ventral margin; the folds and intervening furrows are distantly and coincidently linear-striate, and ornamented radially by depressed subangular plications (about 30), which are wider than the interstitial furrows. Hinge area with a subquadrate, subconvex, nearly vertical median projection, flanked on each side by a linear-lanceolate, longitudinally plicate-striate area.

Dimensions.—Length of hinge-line, 7; greatest antero-posterior diameter, 9; greatest umbo-ventral diameter, 6.

Locality.—Cambrian limestone at Curramulka.

Orthis (?) peculiaris, *spec. nov.* Plate ii., fig. 5.

Transversely subquadrilateral, equilateral; hinge-line in the longest antero-posterior diameter, straight.

Ventral (?) valve flatly convex, with an abruptly depressed and deeply bilobed ventral margin; the mesial furrow decreases in depth as it ascends to near the umbo; the lateral margins are obliquely arched, nearly straight, forming an angle of about 70° with the hinge-line.

Surface marked by depressed unequal folds of growth.

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This valve is considered ventral, because the broken surface in the umbonal region indicates that there had been a small, slightly-elevated beak.

Dimensions.—Length of hinge-line, 20; umbo-ventral diameter, 11; greatest vertical depth of medial furrow, 7 millimetres.

Locality.—Cambrian limestone at Parara, near Ardrossan (one valve).

PTEROPODA.

Salterella planoconvexa, *spec. nov.* Plate ii., figs. 3-3*b*.

Salterella sp., Tate, Trans. Roy. Soc. S. Aust., 1890, p. 249.

Test rather thick, externally finely and closely wrinkled-striated transversely. Shell broadly conical, tapering to an acute point; plano-convex in a medial transverse section; lateral margins rounded or subangulated. Dorsal surface convex, but towards the apex marked with a shallow medial depression bounded by broad obscure ridges. Ventral surface with a broad shallow medial depression, more conspicuous in the apical region.

A natural longitudinal fracture discloses two invaginated septa, and a transverse section near the apex one invagination.

Dimensions of a moderate-sized example:—Length, 28; dorso-ventral diameter, 7; lateral diameter, 10 mills.; but the proportionate measures of the diameters are variable. The longest example measures 35 mm. in length.

Locality.—In the Cambrian limestones at Curramulka.

This species has an external resemblance to *Hyolithes Billingsi*, Walcott, which is described as possessing flat transverse septa. *S. Hardmanni*, Etheridge, the only described Australian species of the genus is elongate-conical, with a circular transverse section, and consequently is far removed from *S. plano-convexa*, which seems to stand alone among congeners.

Hyolithes communis, *Billings.* Plate ii., fig. 2.

Ref.—*Hyolithes communis*, Shaler and Foerste, Bull. Mus. Comp. Zool., 1888, t. 2, f. 23, p. 34; *id.*, Walcott, Tenth Annual Report, U. States Geol. Surv., 1890, t. 77, figs. 3 and 4.

Shell straight, gradually tapering, marked by fine transverse striæ and concentric ridges; the transverse sections are circular or slightly oval.

Locality.—Cambrian limestones at Curramulka.

Hyolithes conularioides, *spec. nov.* Plate ii., figs. 1—1*a*.

Shell straight, elongate, tapering to an acute point, apical angle about 20°; lateral angles sharp. The dorsal and ventral surfaces similar (?); each with two elevated subacute ridges separated by a deep concave medial furrow, the slope from the ridges to the lateral margin moderately steep. Posteriorly the

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ridges become less prominent and the marginal areas less arched. Surface very finely and closely wrinkled-striate transversely.

Length.—25 mills.

Locality.—Cambrian limestones at Curramulka.

TRILOBITA.

Dolichometopus Tatei, *H. Woodward.*

Geological Magazine, August, 1884, t. xi., fig. 3, p. 343.

Conocephalites australis, *H. Woodward.*

Op. cit., t. xi., figs. 2*a*., 2*b*.

Olenellus (?) Pritchardi, *spec. nov.* Plate ii., fig. 11.

Head broad, semicircular in outline, about 15 mm. broad, and 8 mm. long, slightly convex ; margin rather broad and continuous all round, separated about midway from the glabella and cheeks by a narrow low ridge ; glabella oblong, slightly convex, ill-defined by a groove ; eye-lobes crescentiform, narrow, elongate, arching from the base and becoming confluent with the glabella near its summit ; the area between the glabella and eye-lobe is slightly depressed, broad and subdeltoid.

The absence of glabella-furrows and the uncertainty of the presence of genal spines render doubtful the generic location of this trilobite, which is named after Mr. G. B. Pritchard, whose zeal as a collector has so largely enriched our knowledge of the Cambrian fauna of this province.

Microdiscus subsagittatus, *spec. nov.* Plate ii., fig. 12.

Head obtusely sagittate-triangular, about 7 mm. broad and long ; the glabella is oblong, strongly convex, obtusely-rounded, but not narrowed in front, one slight furrow crosses its posterior-third, posterior to which it is narrowed.

Cheeks slightly overhanging the outer marginal groove.

The shape of the head serves to distinguish this species from all others to figures of which I have had access.

Gen. ? Spec. ? Plate ii., figs. 9 and 13.

I figure two very distinct free-cheeks, each having a genal spine, which cannot be referred to any associated species of which the heads are known. Up to the present no glabella without the cheek-pieces have as yet been found.

It is also noteworthy that the remains of trilobites consist solely of heads, of which a considerable number has been collected, neither body-rings nor tail-pieces having yet been discovered.

ENTOMOSTRACA.

Leperditia, *spp.*

The presence of this genus is indicated by the occurrence of two species, one, which has much resemblance to *L. dermatoides*,

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Walcott, is oval in outline, and about 3mm. in the long diameter; the other has a circular outline, with a diameter of about 1 mm. Both are moderately common, but I have not secured any example of either sufficiently free from matrix to permit of a critical comparison with figured species, or to figure with a sufficient degree of accuracy.

ZOANTHARIA.

Protopharetra (?) Scoulari, *Etheridge, fils.*

Trans. Roy. Soc. S. Aust., vol. XIII., p. 18, t. 2, figs. 5-7, 1890.

Ethmophyllum Hindei, *Etheridge, fils.*

Op. cit., p. 14, t. 2, figs. 1-4; t. 3, figs. 9, 10.

Coscinocyathus Tatei, *Etheridge, fils.*

Op. cit., p. 17, t. 3, figs. 3-5 (non figs. 1, 2, and 6-8).

Coscinocyathus (?) Etheridgei, *spec. nov.*

C. Tatei (pars), Etheridge, fils, op. cit., t. 3, figs. 1-2, 6-8 (non figs. 3-5).

The coral to which I would restrict the name of *C. Tatei*, which comes from the Ardrossan limestone, is cup-shaped, very rapidly enlarging, with the basal part consisting of vesicular tissue. From that species I separate the specimens from the Flinders Range, in which the septal structure is meandriform amongst vesicular tissue. The habit of the two corals is so very different as to suggest generic distinction, though it would seem that the anatomical characters are identical.

SPONGIDA.

Girvanella, sp., *Etheridge, fils.* Op. cit., p. 19, tab. ii, fig. 8.

Hyalostelia, *sp.*

Zittel's *Hyalostelia* comprises a genus of palæozoic sponges with siliceous spicules and of hexactinellid type. Their remains are not uncommon in the Carboniferous limestone of Scotland, Ireland and the North of England. The long spicular rods attracted attention as early as 1844, when McCoy referred them to the Annelida, figuring them in his "Carboniferous Fossils of Ireland" under the name *Serpula parallela*. On the discovery in the Scotch beds of six-rayed spicules in association with the rods, its affinity with the sponges was at once apparent, and led to its being classed with *Hyalonema*, or "glass-rope sponge" of the present seas. A better aquaintance with the fossil-forms revealed differences of structure from the existing genus that has led Zittel to still further amend the classification by separating the palæozoic forms from the recent under the generic name of *Hyalostelia*.

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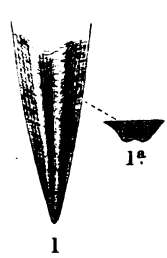
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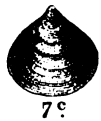
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HUSSEY & GILLINGHAM, I TH.

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Examples of this sponge have been found in the rocks of the Northern Hemisphere as low down as the Ordovician, but so far as I know they have not hitherto been detected in beds of Cambrian age. It was therefore with some interest that I discovered their presence in two transparent sections made of the Curramulka limestone. *Hyalostelia* has regular six-rayed spicules, often with one ray much longer than the rest, and these are interlaced with elongated spicular rods. All these features are apparent in the Curramulka specimens. In the stone the spicules and rods are not in their natural position, but are scattered irregularly in the matrix. The long-rayed arm was clearly seen in one of the spicules, but as its position was not coincident with the plane of the section, it was ground away before the required thinness was obtained. The same thing occurred with the rod-shaped spicules which have been cut at various angles in the transparent sections. The remains of this sponge obtained so far are very limited, and not under the most favourable conditions; it would therefore be premature to attempt a specific determination of the Curramulka specimens, but their very small size renders it probable that they are specifically distinct from the examples of *Hyalostelia* already known.

EXPLANATIONS TO PLATE II.

Fig.

1-1*a*. Hyolithes conularioides. Lateral view and demi-sectional outline. Enlarged 2x.
2. Hyolithes communis. Nat. size.
3-3*b*. Salterella planoconvexa. Dorsal and ventral aspects, and sectional outline. Nat. size.
4. Stenotheca rugosa. Lateral view. Enlarged 3x.
5. Orthis peculiaris. Nat. size.
6-6*a*. Orthisina compta. Dorsal (?) valve and cardinal area of the same. Enlarged 2x.
7*a*-7*c*. Platyceras Etheridgei. Three views, enlarged 2·5x.
8*a*-8*b*. Ophileta subangulata. Upper surface and lateral aspect, enlarged about 3x.
9. Free cheek of unknown trilobite. Enlarged 1·5x.
10. Ambonychia macroptera; much enlarged.
11. Olenellus (?) Pritchardi. Enlarged 2x.
12. Microdiscus subsagittatus. Enlarged 3x.
13. Another free cheek. Enlarged 2x.

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Critical Remarks on A. Bittner's "Echiniden des Tertiars von Australien."

By Professor Ralph Tate, F.G.S.

[Read October 4, 1892.]

A reference to the above-mentioned paper, published in the Transactions of the "Kaiser-Kong. Akad. der Wissenschaften in Wien," and read before that Society March 10, 1892, is here made partly as a supplement to my communication on the Echinoids of the Australian Eocene in Trans. Roy. Soc. S. Aust., vol. XIV., p. 270, 1891, but more particularly as an illustration of the evil of intrusting diagnostic work (except under very special circumstances) to external authors, who cannot have that thorough knowledge of the mode of occurrence and habits of the objects which is so essential to exactitude in defining the limits of variability of species.

Last year I despatched to Dr. Stur, as Director of the Imperial Museum of Vienna, a large suite of fossils from the Older Tertiary strata of Australia, amongst which were sixteen species of echinoids, fairly well represented individually; this material served as the basis of Mr. Bittner's paper. I exercised the greatest care in the selection of the specimens, being desirous to forward only those of established species; in the case of *Psammechinus Woodsi*, *Paradoxechinus novus*, and *Fibularia gregata* the series was fairly large, so as to embrace, in my opinion, considerable range of individual variation. Of the small number of species sent to the Vienna Museum Mr. Bittner makes five additional species, some new varieties, and establishes three new genera. His communication has, however, despite the forcible effort at species-making, a value by illustrating the extent of individual variation of certain common species, and by defining minute details of structure which may indicate some generic relationships not hitherto recognised; it is, moreover, accompanied by four well-executed plates.

The same author supplies a bibliographic reference which was unknown to me, viz:—*G. Cotteau*, "Mem. Soc. Zool. de France, 1890," wherein are described some new or little-known echinoids, including some species from our Eocene strata. That paper is not yet accessible to me.

The following additional references are noteworthy.

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SALENIA TERTIARIA, *Tate.*

Pleurosalenia tertiaria, Pomel, Classification method, p. 94, 1883.

Salenia tertiaria, Bittner, op. cit., t. 1, figs. 6 to 7, p. 333.

PSAMMECHINUS WOODSI, *Laube.*

Id., Bittner, op. cit., t. 1, fig. 1, p. 334 ; and *var. fasciger*, t. 1, fig. 2, p. 336.

Psammechinus humilior, Bittner, op. cit., t. 1, fig. 3, p. 337.

Laube's species is very variable in shape and in the density of the granular ornamentation, particularly on the interambulacral plates. Bittner's *P. humilior* is a large depressed form, and the most commonly occurring. *P. Woodsi*, var. *fasciger*, Bittner, differs by the slight tumidulosity of the interambulacral areas, but this character is also associated with depressed tests, like those of *P. humilior*, as well as with the conic shapes such as Bittner figures. All these occur in the River Murray Cliffs. The species is represented in the Aldinga Cliffs also by the *humilior*-form which graduates into an extreme state, in which the secondary granulation is almost obliterated. It would be quite possible to select half-a-dozen specimens to which as many distinctive names could be applied.

PARADOXECHINUS NOVUS, *Laube.*

Coptechinus lineatus, Bittner, op. cit., t. 1, fig. 4, p. 338.

Orthologhus lineatus, Duncan.

Coptechinus pulchellus, Bittner, op. cit., t. 1, fig. 5, p. 342.

Paradoxechinus novus, Bittner, op. cit., t. 4, fig. 4, p. 344.

I have always been dubious as to the distinctiveness of *Orthologhus lineatus*, Duncan, from *Paradoxechinus novus*, Laube; but I had reserved an expression of opinion till I had an opportunity of examining an example of Duncan's species collected at the locality of his type. Bittner's interpretation of the characters of *Orthologhus lineatus* leaves, however, no doubt, I think, as to the identity of the two. It is noteworthy that Duncan regards *Coptechinus* as a synonym with *Paradoxechinus*, whilst Bittner makes Duncan's genus *Orthologhus* synonymic with *Coptechinus*, but places *Paradoxechinus* independently. Duncan in his classificatory arrangement of the echinoidal genera removes *Paradoxechinus* far from *Psammechinus ;* but my own observations on our Eocene species of the two genera induce me to bring them into very close relationship.

As the result of an examination of many scores of specimens, collected at the same locality and horizon, of what I recognise as *P. novus*, including those obtained from the same place as Laube's type, I find that the test varies from low-depressed to

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moderately sub-conical, that the ornamentation of the plates exhibits very great diversity, ranging from a few radial lines of granulations of varying prominence to densely-packed granulations without any conspicuous radial arrangement; Bittner's *Coptechinus pulchellus* is a form between these extremes.

MONOSTYCHIA AUSTRALIS, *Laube.*

Id., Bittner, op. cit., t. 2, figs. 5-8, p. 345.

MONOSTYCHIA ETHERIDGEI, *Johnston.*

Micraster Etheridgei, Johnston, Proc. Roy. Soc. Tasm., 1877, p. 116.

Monostychia Etheridgei, Johnston, Geology of Tasmania.

During a recent visit to Table Cape I collected a single example of a small *Monostychia*, which is without doubt Johnston's species. The original generic reference by Johnston must have been a *lapsus calami*, as the diagnosis of the species imperfectly indicates a *Monostychia*-like fossil, and the subsequent reference as given above may be regarded as a corrected erratum. *M. Etheridgei* differs from *M. australis* by its narrow oblong-oval outline and its low regularly-convex dorsal surface, broadest behind, with blunt incisions, and gradually narrowing to the somewhat-produced shortly-rounded anterior margin; the tumid ambital margin is very distinctive. Length 18·5, greatest breadth 14·5, thickness 3·75 mm. Specimens from the Murravian beds attain to twice these dimensions.

FIBULARIA GREGATA, *Tate.*

Id., Bittner, op. cit., t. 2, fig. 2, p. 347; *var. orbiculus*, t. 2, fig. 1.

Fibularia Tatei, Bittner, op. cit., t. 2, fig. 3, p. 348.

Mr. Bittner's new species represents an individual state of a profusely-abundant and protean form.

CASSIDULUS LONGIANUS, *Gregory.*

Australanthus longianus, Bittner, op. cit., t. 3, fig. 2, p. 350.

Gregory's species is made the type of a new genus. I am not prepared to discuss the advisability of this step.

CATOPYGUS ELEGANS, *Laube.*

Tristomanthus elegans, Bittner, op. cit., t. 4, fig. 3, p. 352.

Bittner established a new genus for the reception of our fossil, *Nucleolites subcarinatus*, Goldf., and *Echinanthus subhemisphaericus*, Ebert. The Australian species had already been separated from *Catopygus* under the subgeneric title of *Studeria*, and there is no valid reason for its rejection and the substitution of *Tristomanthus*.

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PYGORHYNCHUS VASSALI, *Wright.*

Pliolampas Vassali, Pomel, Classification method.

ECHINOLAMPAS POSTEROCRASSUS, *Gregory.*

Progonolampas Novæ-Hollandiæ, Bittner, op. cit., t. 3, fig. 1, p. 357.

The specimens forwarded to Vienna are authentic examples of Gregory's species, which Mr. Bittner seems to find sufficient individual characters in them to make a new species. Whether or not there is good foundation for the creation of a new genus, I have no desire at present to discuss, but I must strongly protest against such reckless species-making.

ECHINOLAMPAS GAMBIERIENSIS, *Ten.-Woods.*

? Echinolampas Morgani, Cotteau.

I question very much if there be more than one species of this genus in the River Murray Cliffs, but being unacquainted with Cotteau's diagnosis of his new species, I can only cast a doubt on its validity. My knowledge of *E. Gambieriensis* is very extensive, as the species is common, though the possible occurrence of a second species must be admitted.

HOLASTER AUSTRALIÆ, *Duncan.*

? Galeraster Australiæ, Cotteau.

H. Australiæ, Bittner, op. cit., t. 3, fig. 3, p. 359.

H. difficilis, Duncan, regarded by me as a crushed *H. Australiæ*, is erected by Pomel into a new genus with the name *Corystus.*

CARDIASTER TERTIARIUS, *Gregory.*

Id., Bittner, op. cit., p. 360.

MICRASTER ARCHERI, *Ten.-Woods.*

Cyclaster lycoperdon, Bittner, op. cit., t. 4, figs. 1, 2, p. 360.

? Cyclaster Morgani, Cotteau.

Of this familiar echinoid of the River Murray Cliffs two examples were sent to Vienna under the name of *Brissopsis Archeri*, Woods; and because Mr. Bittner had no knowledge that the species had been diagnosed he substitutes a new designation.*

Bittner admits that *Micraster brevistella*, Laube, is congeneric with his new species, but I have already shown that Woods' name has priority; as to Cotteau's *Cyclaster Morgani*, there is good reason to believe that it belongs to the same species.

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* Unter dem Namen *Brissopsis Archeri*, Woods, welcher meines Wissens nicht publicirt worden ist *(sic)*.

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Had I been influenced by my own judgment, and not Duncan's, I should have continued to retain *Hemiaster Arch* Ten.-Woods, in *Brissopsis*, to which Duncan refers *Cyclaster* a synonym. However, the characteristic, incomplete, simple, p petalous fasciole has already been described by me, and sul quently figured by Bittner; the association therewith of almost obsolete anterior groove may make it desirable to emp the name of *Cyclaster* for our species in place of *Micraster Brissopsis* as hitherto.

LOVENIA FORBESII, *Ten.-Woods.*

Sarsella Forbesii, Pomel, Classification, p. 28; *id.*, Bittner, cit., p. 364.

EUPATAGUS ROTUNDUS, *Duncan.*

Euspatangus rotundus, Bittner, op. cit., p. 365.

EUPATAGUS MURRAYENSIS, *Laube.*

Euspatangus Murrayensis, Bittner, op. cit., p. 365.

HEMIASTER PLANEDECLIVIS, *Gregory.*

Id., Bittner, op. cit., t. 2, fig. 4, p. 366.

GUALTERIA AUSTRALIÆ, *Cotteau.*

This is an interesting addition to the echinoid-fauna of Australian Eocene, and is unrepresented in my collection.

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The Effects of Settlement and Pastoral Occupation in Australia upon the Indigenous Vegetation.

By Samuel Dixon.

[Read October 4, 1892.]

I propose to consider in this paper the general effect of settlement in Australia upon the native vegetation, not only by the direct results of cultivation in destroying it, but also those produced indirectly by the introduction of foreign plants; and finally the effect of grazing upon the indigenous fodder-plants.

To generalise on these subjects over such an extensive area as Australia may seem to be presumptuous in view of its widely-different soils and climatic conditions, and though I am fully aware that no one can be in a position to compare all the typical districts, yet I venture to record the results of my own observations in both the settled and unsettled districts of extra-tropical Australia, having paid particular attention as a practical grazier during the last thirty years to the native growths.

Settlement in Australia has been largely influenced by legislature. The pioneer has usually been the cattle-breeder who, following the surface-waters, has penetrated under enormous difficulties to the distant interior; next came the wool-grower, who stocked the back country *(i.e.*, back from the rivers), sunk wells and tanks, and enclosed large tracts with wire-fences; in the districts with regular rainfalls the cultivators of the soil succeeded, who now usually combines grazing on a small scale.

In New South Wales and Victoria the principle of "Free Selection before Survey" allowed the farmer to select the richest and most fertile spots, which became centres for the dissemination of foreign plants commonly of little value, in fact, weeds, the rankness of growth of which frequently overcame the indigenous vegetation, especially the herbaceous. On the exhaustion of the soil by cultivation and grazing with cattle in succession, the ubiquitous red gums *(Eucalyptus rostrata)* re-occupied the land, and was accompanied in a small degree by various species of Acacias *(e.g., A. decurrens, A. pycnantha,* &c.), and under their protecting shade there reappeared the perennial grasses, such as species of *Stipa, Danthonia, Panicum,* &c. In other districts the worn-out farms, being grazed with sheep, are now grassy pasture lands and with the exception of the native grasses comparatively few species of the indigenous flora remain.

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In North-Western Victoria and South Australia, where very extensive tracts have been cultivated in the "mallee scrubs," it might have been expected that the original mallee (*Eucalyptus oleosa* and *E. gracilis*) would have reappeared, but so far this is not the case, as wherever that mode of cultivation known as "mullenizing" has been sufficiently prolonged to ensure the death of the primitive growth by uprooting the underground stem—popularly known as the "mallee root"—regeneration is almost wholly unknown, and if thoroughly stocked with sheep, it never does take place, owing to the infrequent germination of the seeds and the extreme slowness of growth of the seedlings.

Sufficient time has not yet elapsed since settlement took place to formulate the conditions under which the original vegetation can be expected to reclothe the surface exhausted by farming, but in the cooler and moister regions we find, as stated above, that *Eucalyptus rostrata* does rapidly resume its sway over the cultivated tracts where it originally prevailed; but in the warmer and drier zones we are without any extensive examples of the native vegetation reasserting its dominion. These former areas present the best examples of the overwhelming growth of introduced weeds—the stinkwort (*Inula graveolens*) in summer, and the Cape weed (*Cryptostemma calendulacea*) and sundry thistles, &c., in spring. In the tropical region, however, where abandoned sugar-cane fields are now covered with *Lantana*, we may expect the original dense growth to reappear by degrees.

Necessarily as cultivation proceeds a larger area becomes despoiled of all the native plants. the forests are cleared, and repeated ploughings complete the extermination. Here, introduced plants find a suitable habitat for propagation, and each isolated farm becomes a centre of dissemination of the various weeds, which injuriously affect the grain-crops in the northern hemisphere; a list of these troublesome plants would be very extensive, and it is steadily increasing, and although some few annuals of indigenous growth reproduce in these cultivated spots, yet none of them do so to any injurious extent, none can therefore be considered "weeds."

It would be very difficult to indicate any Australian plant which has increased in numbers while the land is regularly cultivated for a lengthened period; intermittent cultivation does, however, tend to the individual-increase of certain vigorous species, thus on limestone soils we find *Zygophyllum*, *Erodium*, *Erysimum*, &c., similarly where cultivation has been attempted in, or at the boundary of, the saltbush-country, which has prepared the soil for the retention of the seeds, and if stock be kept off for two or three years, the more tenacious plants, such as *Kochia*, *Atriplex*, &c., reappear.

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In the moister regions, cultivation generally annihilates everything indigenous, and after its cessation annuals very slowly reappear. Each locality has of course its peculiar species, but the common Purslane *(Portulaca oleracea)*, so widely spread through Asia and Australia, and known by the aborigines as "Parakylia," is almost universal in rich soils.

Many garden plants are spreading rapidly, and becoming weeds, so that it is now quite common to find some of them in secluded localities to which they have spread from a selector's garden; the showy *Vinca rosea*, so abundant on the Queensland coast is a good example, but I do not know of any introduced forest-tree which has reproduced itself largely, except under cultivation, although *Pinus halepensis* might have been expected to do so.

It is safe to conclude that on the whole cultivation means absolute destruction to the Australian flora, whether of the tropical, subtropical, or temperate climates; and because the richest soils are naturally those most suitable for cultivation, the species endemic in those localities are most likely to become extinct. The Illawarra district of New South Wales affords a striking example of the alteration which may take place within a very limited period; in few spots can the botanist now discover the specimens of the peculiar and lovely flora for which it was celebrated, when first settled, and this almost the loveliest district of Australia has now become commonplace and comparatively uninteresting to the botanist.

The farmer, the squatter, the miner, and the swagman all cause extensive conflagrations, and by their oft-recurrence the arborescent growths are reduced to mere scrubs, and the more tender plants, such as orchids and other flowering plants, are utterly destroyed with a recklessness which can only be fittingly described as insane. In aboriginal times fires were much less frequent, and in the forest regions were rarely intentional. Although in the plains-country, between the coastal forest-belts and the desiccated interior, fires were systematically employed in hunting wallabies and kangaroos, yet as these plains were usually grassy little harm resulted; in fact, these fires at long intervals assisted the germination of the hard seeds of the Acacias, &c., and were so far beneficial. Now, however, frequent fires and the subsequent grazing by sheep, which eat off the tender shoots of almost every shrub and the hearts out of the Xanthorreas, and nibble the shoots of other arenaceous-loving plants, prevent anything but the hardiest surviving; from this cause alone many rare plants, most of which are of sporadic occurrence, and would seem to be survivals of a still more ancient flora, are being surely destroyed, although under

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other circumstances none of our floras are so likely to remain in their primitive condition as those where the siliceous nature of the soil naturally produces plants which from their innutritious quality fail to support any sort of stock, nor do introduced plants as a rule find this class of soil congenial. It is to be expected therefore that the Banksias, Hakeas, Melaleucas, and other plants eminently characteristic of Australia and peculiar to its sandy poor soils will remain comparatively unaffected in those parts of the continent which are not adapted to carry stock, are unsuited for cultivation, and remain comparatively free from bush-fires.

On these grounds the unique and singularly lovely flora of Western Australia, especially of its "sand plains," and the moist district immediately contiguous to King George Sound, may possibly remain for centuries to come. Indeed to this peculiar flora occasional fires are to some extent beneficial, as not only are the long buried seeds germinated, but many species produce in the succeeding year their most luxuriant blooms. Of this, the locally named Cabbage- or Flame-tree, *Nuytsia floribunda*, is the most conspicuous instance, whose strikingly-brilliant orange-coloured bunches of bloom are only to be seen in their full gorgeousness at this time.

The Xanthorreas too invariably flower after a thorough scorching and thereby afford to bushmen sound data for reckoning the period which elapsed since the last fire.

Indeed, of West Australia it may be said that no other part of the continent is so likely to have some of its indigenous flora preserved intact; because not only from the poorness of the soil and the fire-resisting quality of so many of its endemic plants, but also from the presence of several poisonous and deleterious plants which will not allow of overstocking, which is proving so prejudicial to the Eastern-Australian floras. With the exceptions referred to of West Australia and other analogous soils with corresponding floras, the constant recurrence of extensive conflagrations are in the highest degree prejudicial, and particularly to the forest-regions, and must ultimately destroy the noble growths of those giant forms which add so much to the value and beauty of our forests. In ordinary seasons sufficient moisture exists to prevent extensive destruction, but at intervals extremely dry seasons are experienced, and the undergrowths become highly inflammable; and then miles of country are completely devastated; and although only old or partially-decayed trees are consumed, the scorching of the upper branches of vigorous trees causes these to die away, and, ultimately rotting, the whole trunk becomes involved in decay, so that the next fire makes a prey of every tree so affected; the inevitable result being that wherever fires con-

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stantly recur, trees valuable for timber cannot be produced, and finally the forest-regions are reduced to mere expanses of unsightly and useless scrubby growths.

The unwise system of permitting "free selection" within the boundaries of natural forests has produced such enormous destruction of timber that it becomes impossible to even roughly estimate the amount of loss from this cause alone, not only from the fires which the selectors have originated wilfully or carelessly, but from the injury done by stripping the very best timber-trees for the sake of the sheet of bark so obtained, and, in spite of the regulations intended to stop this senseless havoc, the practice is still common to ruin a tree worth possibly four or five pounds sterling for the sake of a sheet of bark worth possibly sixpence or a shilling.

The outlook for succeeding generations is indeed dismal should the destruction of the forests continue as in the past; our watersheds will become bare, bald hills and mountains, from which torrential floods will devastate the alluvial plains, and though the grazing area will be much extended, it will be at the expense of those forest-regions which so greatly affect and modify the extremes of climate for which Australia is remarkable.

We can look to other countries to learn the extent of injury which the destruction of the indigenous flora may entail. Of this Spain affords a good example. Since the Roman period her extensive forests of oak, chesnut, and pine have almost entirely disappeared, and the extremes of climate being thus intensified, that country has lost much of her fertility, and consequently is less able to support a large population.

To counteract the disastrous result of the wholesale destruction of that portion of the Australian flora which now clothes the forest-regions with the very best and most valuable hard woods, an enlightened public sentiment needs to be cultivated, and though a beginning has been made, much remains to be done; and it cannot be too much insisted on that the preservation of the Eucalyptus in its numerous species is of the very greatest and most vital importance to the best interests of Australia. It is of truly national consequence, for not one single instance of an exotic timber-producing tree can be quoted which so completely fulfils the conditions demanded by the soil and climate of Australia as the various Eucalypts now do, namely, great resistance to extremes of heat and cold, rapid reproduction, and a wonderful power of recovery from the effects of fire.

That the public sentiment in favour of the preservation of the indigenous flora is awakening is evidenced by the readiness of large and small land-owners to plant round their homesteads various shelter-trees, which some of the Colonial Governments encourage by the gratuitous distribution of young seedlings.

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Ring-barking, especially in New South Wales, where it has been often carried out very injudiciously, has produced deplorable results. Owing to the policy of "selection before survey," it is not infrequent to see magnificent timber ring-barked so as to comply with the "improvement" clause, so that it is possible to see trees worth £5 to £10 a-piece which have thus been ring-barked—destroyed under the pretence to "improve" the "selection." Even on pastoral properties the practice of ring-barking has not been an unmixed benefit, for although the crop of grass is often increased, the more tender herbaceous and shrubby plants die out, partly from the loss of shade, which permits the full effect of frost to be felt, and further injury results from the earlier drying-up of the grasses thus exposed to the full heat of the sun.

In the South-Eastern portion of South Australia a similar result to that caused by ring-barking has been produced by depasturing stock. Large tracts of dead gum-trees are there to be seen, and it appears to me as if the trampling down of the soil by cattle has so altered the conditions of growth, that the trees, losing their vigour, have fallen a prey to insect-pests, which, yearly increasing, have finally killed them.

The only instance in which settlement in Australia has had the effect of increasing the indigenous vegetation on a large scale occurs in the Cobar district, where the Cypress-pine *(Callitris verrucosa)* has increased to such an extent that much less stock can now be carried there. This has arisen apparently from the grass being eaten off by stock, so that bush-fires no longer travel over large areas, and the young plants, which are easily destroyed by fire, growing closely together and seeding abundantly, take complete possession of the soil, to the exclusion of other plants. This is the only instance within my knowledge of any native plant largely extending its area after settlement has taken place.

On the borders and beyond the limits of successful cultivation alien plants do not flourish every season, but some individuals produce seed which, on the occurrence of a wetter season than usual, grow and reproduce with great rapidity wherever the surface of the ground has been broken. This may be observed along our Great Northern railway within the dry interior, where the common weeds of the farming districts have sprung-up and propagated, though it is not yet apparent if these strangers will maintain themselves in so arid a climate, or successfully compete with the indigenous flora—most probably not!

In the regions where cultivation is profitable, the introduced plants prove formidable rivals to the native ones in the struggle for existence, and attain a luxuriance of growth quite unknown in their original habitats; nor do they confine themselves to cul-

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tivated areas alone, since carried about in the hair of horses, in the wool of sheep, or exuded in the dung of cattle, many of them are now to be found in exclusive possession of the best soils. With some, as the thistles, the invasion is transitory, as after exhaustion of the soils of the special constituent required by them, the growth becomes weaker, and the plants finally disappear.

The extension of railways throughout Australia has also greatly assisted in a wide and rapid distribution of imported plants, not only from the seeds present in the hay on which the horses used in the construction of the various lines, but also in the facilities offered for the transportation of fodder grown in coastal regions, into the most distant pastoral districts, and as the soil throughout the interior regions of Australia is commonly of very excellent quality, climatic conditions seem the only bar to their indefinite increase.

It is, however, in the regions of cultivated lands and their immediate vicinity that the most striking examples of the effects of these introductions are to be noted. Two or three plants in particular may be instanced which under certain conditions take complete possession of the soil, to the utter exclusion of any other; the most universally spread and the best known is the corkscrew- or clover-burr (*Medicago denticulata*). Coming up annually with the first fall of rain, it spreads in dense, close masses with prostrate stems, and entirely chokes the growth of any other annual; when the heat of summer is felt it quickly dries up and its abundant seed-vessels then freely cover the ground. No introduced plant has produced greater loss to the woolgrowers than this, for although a fairly good fodder, the seed-pods, coiled up into two or three whorls, readily become affixed by their serrated edges to the wool on the bellies and legs of sheep. To the flock-master the presence of these troublesome seeds means a loss of one penny per lb. on all those parts of the fleece which contain them, so that the total yearly loss amounts to hundreds of thousands of pounds. The best soils with the best climate producing it in the greatest abundance; so that our native clovers, especially the delightfully-scented and invaluable *Trigonella suavissima*, have no chance to survive against so vigorous an enemy.

Another plant, the Bathurst Burr, *Xanthium spinosum*, a South American introduction, is also yearly the cause of great loss to the wool-grower, and though it is only a summer-growing plant, and ripening its troublesome burrs in autumn, yet is useless as a stock food, and to some extent also interferes in certain situations with the reproduction of native plants.

A third example is the South African *Cryptostemma calen-*

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dulacea, or Cape-weed, which, like the clover-burr, fairly smothers-out of existence native annuals and perennial grasses; its abundantly produced seeds germinate with the first fall of rain, and the plant grows very rapidly and vigourously. An individual of this procumbent species will often cover a space of 30 inches in diameter, but commonly such exuberant growth is on ground where the surface has been broken by cultivation or otherwise.

Other examples of introduced plants, which take complete possession of the soil, often covering acres, especially where it is very rich, are afforded by various species of the thistle-tribe, and several other European composites have also become very common. Amongst the numerous shrubby plants which threaten to displace the Australian indigenes, none are more noteworthy than the sweet-briar *(Rosa rubiginosa)*, and the dog-rose *(R. canina)*, which on neglected properties take complete possession, and are difficult to eradicate. In the coldest and moistest parts of Australia the Bramble *(Rubus fruticosus)* is already forming tangled brakes as impenetrable as the masses of furze or whin *(Ulex europæus)* to be found under the same conditions. A full list of introduced plants would include a large proportion of small or of no economic value.

The destructive effects of settlement upon the indigenous flora of Australia is nowhere more apparent than in the purely pastoral districts where the rainfall is decidedly scanty. Throughout the immense region known as Riverina, and to the extreme western and northern runs of South Australia, the injury to the original vegetation by overstocking has assumed so great a magnitude as to entail a national loss. Continuous overstocking has destroyed the bushy vegetation and the perennial grasses. The numerous species of *Atriplex*, *Kochia*, *Rhagodia*, and other Salsolaceous plants, *Mesembrianthemum*, and a long list of other small shrubs, together with the smaller tree-growths of various Acacias, *Myoporum*, &c., which formerly provided abundant sustenance for sheep and cattle during ordinary droughts, have now disappeared, and only inedible shrubs, mostly of the Proteaceus order, remain. The effects of this destruction had begun to be felt at each period of drought more and more, and now the rabbit-plague comes to finish the devastation begun by injudicious stocking, so that throughout the territories above mentioned hundreds of square miles are to be found which (except during favourable seasons when the rainfall is sufficient for the growth of annual grasses and herbs) have ceased to carry stock. Indeed, for miles back from the river frontages, and in the neighbourhood of wells and dams, an unproductive surface, trodden down until almost impervious to water, now extends. Hence, from the diminished

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yields of wool and the tremendous losses of stock, which each drought now entails, extensive squatting properties fall into the hands of financial institutions, who find that "runs" which formerly produced thousands of pounds per annum now require an income to be spent upon them, as it is only in very wet seasons that a surplus over the expenditure may be expected.

On the Lower Murray River, in the mallee country, many such dire experience could be related, and it does not appear probable that these extensive tracts can become again covered with their original flora so rich and varied in drought-resisting plants, a flora which is unequalled in the world for the abundance and variety of the very best fodder-plants. If it were possible to exclude herbivorous animals from these desolated areas we might hope that in the course of years, the seeds now buried might vegetate and gradually re-clothe the country; but unfortunately, though every few months of drought destroys millions of rabbits, there always remain enough to re-stock the country, and so rapidly do they reproduce that very few months are sufficient to cover the country in incredible numbers. It may possibly happen that in the course of years, as the shrubs from which they derive moisture during the hot months become gradually extinct, they may perchance become extinct also; but it is appalling to think of what must first happen when we find such trees as Sandalwood *(Myoporum platycarpum)*, Mulga *(Acacia aneura)*, Myal *(A. cyclops*, &c.), Leopard-wood *(Flindersia maculata)*, Dog-wood *(Eremophila longifolia)*, and many others, all carefully ring-barked by these destructive rodents.

Only the two extremes of country are safe from these pests, namely, the very moist, where they become attacked by entozoa; and the very dry, say, inside the five-inch rainfall belt, where the rainfall in some years is only two inches, or less.

It is no exaggeration to say that the devastations to the Australian flora by this rabbit-plague are more than all the other causes put together, and the pecuniary loss to Australia has already amounted to many millions of pounds sterling.

In Western Australia the destructive effects of settlement are not so conspicuous; two factors of much importance preventing systematic overstocking exist, and the rabbit-plague has not yet reached there. From the siliceous nature of much of South-Western Australia, there are very large tracts, the prevailing flora of which is so extremely innutritious that neither cattle nor sheep can be profitably kept; and though after fires in the summer the winter rains produce an abundance of tender shoots, stock can only be grazed for short periods. These "sand-plains" are, of course, altogether unfit for the cultivation of any food-producing plants, whilst in other districts the prevalence of plants

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poisonous to all ruminants prevents any attempt at system overstocking

Originally the gorge of the Lower Murray was well-cove with herbaceous plants and grasses, which were confined to actual banks of the river and to the lagoons, some of which two to three miles long, and one to half a mile across. Here "lignum" *(Muehlenbeckia Cunninghami)*, attained its larg growth, 15 to 20 feet high, and so thickly matted together as be impenetrable; but at the present time, many miles of valley have been denuded of lignum, reeds, bulrushes, and gras and the prevailing aspect is an uninteresting expanse of dry n and sand, only diversified by a few Eucalypts. The destruct of the swamp-vegetation throughout Riverina has considera lessened the amount of stock which formerly grazed upon during the long hot summers and during droughts.

No class of country suffers so extremely from excessive stock as the sand-hill country, and especially the sand-dunes wh fringe much of the coast-line of Southern Australia. As natu growth is exterminated, the sand, no longer protected by herbs and shrubs shading its surface, and binding it together w their very long and widely-spreading roots, is driven by the p vailing winds over the surrounding country, to the destruction all lowly vegetation; even forest-trees are overwhelmed in advancing sand-waves. This phenomenon is not confined to coast-line, but instances, usually on a limited scale, may be fou in the interior.

The destructive effect by stock trampling down and consolid ing the clay-surfaces around watering-places has already b adverted to; but whilst the whole vegetation in purely paste districts is affected more or less by this trampling, yet the ef upon the growth of certain species of grasses is of a more parti lar kind. Those whose seeds are provided with long awns, s as *Andropogon*, *Aristida*, *Stipa*, &c., are able to penetrate the and await the rains to germinate them, while the more valua and nutritious ones—as, for instance, *Panicum*, *Sorghum*, *Spo bolus*, &c.—being without those special arrangements, are lia to disappear, not alone from the difficulty of obtaining suita lodgment in the ground, but also from all stock preferring th more succulent stems to the hard siliceous culms of their rivals.

From these causes, overstocking, rabbits, and introdu plants, it appears probable that in the near future the featu peculiar to the Australian landscape from its endemic floras w be greatly modified. As, for instance, the aspect of our Pac slope has been in certain spots much altered by the spread of cactus, and our water-courses are choked up in various parts the colonies by the spread of the common water-cress (*Nasturti officinale*).

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The results of overstocking hitherto referred to have been mainly due to sheep. Cattle, although very destructive to some of the shrubby trees, such as Emu-bush or Bitter-bush (*Heterodendron oleaefolia*), Quondong (*Santalum persicarium*), Mulga (*Acacia aneura*), of all of which they are extremely fond, breaking down the branches to reach the young growth, are otherwise not nearly so destructive as sheep; and where not grazed in excessive numbers, the native grasses have greatly increased in quantity, but the influence of big cattle in consolidating the surface soil and making it more retentive affect the native vegetation rather beneficially, and the long paths made in crossing the country often develop into small watercourses, and the vegetation of the lower-lying ground of the drier part is thereby improved.

It is not to be supposed that in pointing out the dire results of overstocking, especially with sheep, that moderate and judicious grazing has the same effect. Of course, the exigencies of bad seasons, with little or no rain, may compel overstocking; but, if not persisted in, the injury done is not permanent, and a few wet years recuperate the pastures.

In newly-stocked country, where the rainfall is light and precarious, the indigenous perennial grasses exist as tufts wide-apart; hence, while the stock is few in numbers and not kept continuously in the same spot, these perennial grasses greatly increased and covered the ground fairly well, but as the stock multiplies the perennial grasses and the shrubs became fewer, or died out, and their place is occupied by annual grasses and herbs. By preference the stock eat the sweetest and best, and the result of much overstocking for lengthy periods is that inferior grasses prevail, as evidenced by the poverty and poor condition of the animals, despite the abundance of feed. An intelligent system of grazing will allow the best grasses to reproduce themselves, and thus secure an increase of the yield of wool and lambs.

Many of the innutritious grasses are importations, and one of the worst is an Indian grass (*Hœmarthria*, sp.), which has spread very widely on the better soils, and is very abundant in the districts near to Sydney, where originally the kangaroo grass (*Anthisteria ciliata*) was common. Of native innutritious grasses species of *Andropogon* and *Aristida* furnish typical examples.

Generally the results of settlement appear on the whole extremely injurious to that portion of our vegetation which comprises the best fodder-producing plants, and that the very existence of the indigenous forests is threatened by the constantly-recurring conflagrations, and it may perhaps be permitted to suggest remedies of a practical nature to mitigate these deplorable effects. In all natural forest-country very extensive forest-reserves ought to be set apart in such a manner as to be beyond

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the possibility of resumption by the political heads of the Crown Lands Department of each colony, whose fiscal necessities have frequently caused the public estate to be alienated for the benefit of private individuals. Each reserve would require one forester at least, who should be permanently resident thereon. The boundaries of each forest should be as far as possible natural ones. It is true most of the colonies have now a forest department, but some of the reservations are unsuitable, and those suitable are often too limited in extent; whilst the resumption of the reservation is too easily obtained.

In respect to the preservation of our exceptionally rich and abundant fodder-plants on areas where the rabbit-plague is kept within reasonable limits, graziers will find it entirely to their own interests to encourage the most valuable growth by the adoption of a system of alternate grazing of sheep and cattle on the different divisions of their holdings. Seasons of heavy and continuous rains invariably cause the long-buried seeds to spring in wonderful abundance, and these only require sufficient time to reach a development which will withstand a moderate amount of grazing.

It cannot be too often repeated that the fat-producing quality of our native vegetation, which covered originally all the interior at present stocked, is quite unequalled in the world for its abundance and hardiness to withstand an ordinary drought and it is notorious that stock fed on it will travel hundreds of miles to market without serious deterioration. Unless some such plan is widely acted on it is safe to forecast the extinction of that portion of our vegetation whose great value and importance is due to its economic value as a food for stock, and capable of increasing and multiplying under such conditions of heat or cold, drought or flood, as no other vegetation can possibly do.

The longer this extinction progresses the greater and greater will be the losses entailed by periods of drought, and it has been already demonstrated on an extensive scale that this destruction renders valueless very large tracts of country; and that in other parts, where the rainfall is greater and more regular, the edible shrubs and perennial grasses are liable to be supplanted by annuals and worthless perennial grasses. Hence the preservation of our indigenous flora, whilst looked upon as a fad by the ignorant and unthinking, is really in its cumulative effects one of great national importance—an importance difficult to exaggerate as affecting our food-supplies and the greatest of our sources of exported wealth.

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Further Notes on Australian Coleoptera with Descriptions of New Genera and Species.

By the Rev. T. Blackburn, B.A.

XII.

The following pages contain *inter alia* descriptions of a number of new species of *Coccinellidæ*, collected in various parts of Australia by Mr. A Koebele, and sent to me subsequently to the collection dealt with in Part XI of this series of memoirs.

HYDROPHILIDÆ.

BEROSUS.

B. majusculus, Blackb. This appears to be the Southern form of *B. externespinosus*, Fairm. All the South Australian examples I have seen have their legs entirely testaceous, while those from Queensland have their posterior four femora widely black at the base. In both forms the apical spines of the elytra are variable, and I do not find any constant character apart from colour to distinguish the two.

PHILHYDRUS.

P. lævigatus, Blackb. I have recently received from Mr. Tryon, of Brisbane, some examples of *P. maculiceps*, Macl., taken by Mr. Relton. *P. lævigatus* being not unlike it, it may be well to record that besides the colour differences, the maxillary palpi are considerably shorter in *lævigatus* and the puncturation of the elytra is evidently closer, the rows of larger punctures, moreover, being scarcely traceable, whereas in *maculiceps* they are very well defined under a good lens.

DERMESTIDÆ.

TROGODERMA.

T. Reitteri, sp. nov. Ovale; nigro-hirtum; nigrum, antennis pedibus et elytrorum humeris (nonnullorum exemplorum marginibus postice quoque) rufis; obscure sat sparsim punctulatum; sulcis antennariis profundis bene determinatis, triangularibus, postice clausis.

Feminæ (?) antennarum clava 3-articulata. Long., $1\frac{1}{5}$ l.; lat., $\frac{7}{10}$ l.

The distinctive characters of this species are its sparse

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puncturation, the conspicuous red blotch on the shoulder, and (in one sex at any rate) the three-jointed club of its antennæ.

N.S. Wales, near Sydney.

T. varipes, sp. nov. Ovale; fulvo-hirtum; nigrum, tibiis tarsis et (nonnullorum exemplorum) elytrorum apice rufis; sat crebre sat fortiter punctulatum; sulcis antennariis profundis bene determinatis, triangularibus, postice clausis.

Maris antennarum clava 4-articulata, articulo clavam præcedenti sat dilatato.

Feminæ clava 4-articulata, articulo clavam præcedenti haud dilatato. Long., $1\frac{1}{5}$—$1\frac{3}{5}$ l.; lat., $\frac{7}{10}$—1 l.

I have examined a considerable number of specimens without detecting any character likely to be sexual except that in the smaller and narrower examples the joint of the antennæ preceding the club is evidently dilated so as to be somewhat intermediate in width between the preceding joints and the first of the club.

S. Australia; near Adelaide.

T. baldiense, Blackb. I am disposed to think that this insect is probably identical with *T. apicipenne*, Reitter. Unfortunately Herr Reitter gives no information as to the structure of the antennæ or their cavities in describing that species, so that it is impossible to feel any certainty; but a recent reconsideration of the nomenclature of the *Dermestidæ* in my collection has resulted in the opinion that the above alteration is probably required.

LAMELLICORNES.

ONTHOPHAGUS.

O. blackwoodensis, sp. nov. Sat nitidus; niger, vix violaceo-tinctus elytris ad apicem (et nonnullis exemplis pygidio) rufo-maculatis, antennis palpis tarsisque rufis vel testaceis; corpore subtus pedibusque minus crebre fulvo-hirsutis, capite prothoraceque fortiter sat crebre punctulatis; hoc æquali, illo antice sat fortiter emarginato; elytris sat fortiter striatis, striis crenulatis, interstitiis leviter convexis, rugulosis.

Maris vertice tuberculum in medio ferenti, sutura clypeali carinata arcuata.

Feminæ vertice carinam transversam angulatam ferenti, sutura clypeali ut maris. Long., $2\frac{1}{4}$ l.; lat., $1\frac{3}{5}$ l.

S. Australia; near Blackwood.

O. henleyensis, sp. nov. Sat nitidus; niger, nonnullis exemplis leviter viridi-tinctis, corpore subtus pedibusque minus dense fulvo- vel cinereo-hirsutis; capite sat fortiter prothorace

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crasse sat crebre punctulatis; illo antice fortiter emarginato, emarginaturæ lateribus fortiter productis; elytris sat fortiter striatis, striis crenulatis, interstitiis fortiter convexis sat crasse rugulosis.

Maris vertice cornubus 2 (his rectis, minus elongatis, vix divergentibus, haud ad basin conjunctis) armato, sutura clypeali carinata sat recta.

Feminæ vertice carina transversa arcuata armato, hac ad latera magis elevata, nonnullis exemplis in medio interrupta. Long., 3—3½ l.; lat., 1⅘—2⅕ l.

S. Australia; Henley Beach and other localities.

O. nitidior, sp. nov. Sat nitidus; niger, vix cupreo-micans, corpore subtus pedibusque minus dense fulvo- vel cinereo-hirsutis; capite crebre prothorace fortiter sat crebre vix crasse nec rugulose punctulatis; illo antice sat fortiter emarginato; elytris sat fortiter striatis, striis crenulatis, interstitiis leviter convexis sat fortiter nec rugulose punctulatis.

Maris vertice lamina erecta transversa instructo, hac supra fortiter arcuatim emarginata; sutura clypeali carinata, vix arcuata.

Feminæ vertice carina transversa angulata instructo, sutura clypeali ut maris. Long., 1⅘—2⅕ l.; 1⅗—1⅖ l.

The frontal lamina of the male is so deeply emarginate that its two ends stand up almost like horns when looked at from a certain point of view.

N.S. Wales; taken by Mr. Sloane near Mulwala.

APHODIUS.

A. Tasmaniæ, Hope. Harold (Berl. Zeit., 1861, p. 94) redescribed this species very fully, and pointed out that *A. Howitti* is a variety of the same. He, however, says nothing about the sexual characters, having, I presume, only one sex (evidently the female) before him. The male differs by its very much wider prothorax, which to a casual glance appears considerably wider than the elytra, but is in reality just the same width as the widest part of the elytra; the prothorax of the male, moreover, is much less strongly punctulate than that of the female, and the anterior tibiæ are much narrower and more elongate with their external teeth, though not much shorter, yet evidently narrower so as to be more widely separated one from another. The prothorax of the female to a casual glance appears of the same width as the elytra, but measurement shows it considerably narrower than the widest part of the elytra.

A. yorkensis, sp. nov. Mas. Sat parallelus; nitidus; in lateri-

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bus longe ciliatus; rufo-ferrugineus, antennis palpisque flavis; capite grosse punctulato, clypeo antice truncato, lateribus rotundatis integris; prothorace subquadrato, quam longiori quinta parte latiori, quam elytra latiori, æqualiter subtiliter nec crebre punctulato, basi marginata; scutello modico punctulato (ut *A. Tasmaniæ*): elytris crenato-striatis interstitiis sparsissime punctulatis leviter convexis; pedibus minus elongatis, tibiis anticis valde arcuatis, extus tridentatis, dentibus inferioribus 2 permagnis, dente superiori parvo.

Feminæ prothorace multo minore, quam longiori dimidio latiori, quam elytra angustiori, sat fortiter punctulato; tibiis anticis fere rectis, dentibus inferioribus minoribus, superiori majori. Long., 4—5½ l.; lat., 1⅗—2⅖ l.

At once distinguished from *A. Tasmaniæ*, Hope, by the lateral margin of the prothorax being evenly continued along the base. The prothorax of the male is very large and massive, being not very much smaller than the elytra. The head is evidently more coarsely punctulate than that of *A. Tasmaniæ*; it has a fairly-well marked tubercle in front of each eye, but no defined elevation on the median part.

S. Australia; Yorke's Peninsula.

MÆCHIDIUS.

M. tibialis, sp. nov. Minus elongatus, subovalis; sat nitidus; rufus, capite elytris pedibusque obscurioribus; capite antice fortiter triangulariter exciso, clypeo medio longitudinaliter carinato, lateribus sinuatis; prothorace fortiter transverso, antice sat fortiter angustato, leviter sat crasse nec crebre punctulato, lateribus leviter sat æqualiter arcuatis, angulis omnibus acutis (posticis retrorsum directis); elytris leviter striatis et obscure geminatim seriatim nec crebre granulatis; femoribus sat dilatatis; tibiis anticis extus dentibus 3 sat magnis sat æqualibus (inferioribus 2 approximatis, a tertio sat remotis) armatis; tibiis posterioribus 4 robustis, in medio transversim carinatis, ad apicem extus lobato-productis, lobo truncato articulo tarsorum basali longitudine æquali; unguiculis simplicibus; elytris propygidium haud tegentibus, pygidio longitudinaliter carinato. Long., 4 l.; lat., 2 l.

The femora and tibiæ of this species resemble those of some *Liparetri* (e.g., *L. ordinatus*, Macl.), but the apical prolongation of the external margin of the posterior four tibiæ is more like that of some *Dynastides* (e.g., *Cryptodus paradoxus*, Macl.). The exposed propygidium is a character I have not seen in any normal *Mœchidius*. The general facies is quite that of *Mœchidius*, as also the structure of the head, sterna, &c. (so far as I can see without dissection); the antennæ fall into prosternal cavities

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exactly as in *Mœchidius*. I should be inclined to propose a new generic name for this species if it were not that Mr. Waterhouse has already characterised a genus *(Epholcis)* very near *Mœchidius*, but without referring to the structure of the legs or the length of the elytra in its species, so that I cannot be quite sure this insect might not be referred to it. It is better therefore, for the present, to regard it as an extreme form of *Mœchidius*.

N.S.W.; taken by Mr. Froggatt near Bungendore in a nest of *Termitidæ*.

PSEUDORYCTES.

P. tectus, sp. nov. Rufo-ferrugineus, sat nitidus; subtus dense fulvo-pubescens; capite minus parvo; scutello punctulato minus transverso, tibiis extus bicarinatis.

Maris prothorace quam elytra subangustiori, tota superficie excavato, parte excavata dense hirsuta, margine antico cornu magno (hoc supra caput antrorsum producto et ad apicem sursum reflexo, apice profunde bilobo, lobis extrorsum oblique directis) armato, utrinque in cornu elongato valido (hoc ad apicem acutum introrsum curvato) producto; antennarum flabello valde elongato quam stipes vix breviori; tarsis elongatis. Long., 10 l.; lat., 5½ l.

Femina latet.

I think this species may be referred to *Pseudoryctes*, although its tarsi are evidently longer than those of *P. mullerianus*, White, and the upper carina of its tibiæ is much more developed than in that species.

Australia; a single specimen in the S.A. Museum; its exact habitat not known.

BUPRESTIDÆ.

ASTRÆUS.

A. navarchis, Thoms. M. J. R. H. Neervoort van de Poll, in his Monograph of *Astræus*, gives merely "Australia" as the habitat of this species. I have seen an example in the collection of C. French, Esq., which that gentleman informs me was taken in Western Australia. M. Thomson gave Tasmania as the habitat, but I take it that this was a mistake.

A. Oberthüri, V. de Poll. The exact habitat of this species also seems to have been unknown to M. van de Poll. Mr. French gives Queensland as the locality, where an example in his collection was taken.

A. simplex, sp. nov. Sat elongatus; nitidus; pube albida nisi in elytris vestitus; capite prothoraceque nigris, hoc ad latera illo antice viridi-cyaneis, elytris cyaneis maculis quaternis

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flavis ornatis, corpore subtus viridi, antennis nigris, pedib viridibus, tibiis apicem versus tarsisque testaceis, his pau infuscatis; capite ruguloso, in fronte linea elevata glabr prothorace convexo, canaliculato, fortiter sat æqualit punctulato; elytris costatis, interstitiis planis, apicibus fo titer divergentibus, spinis suturalibus marginalibusq validis. Long., $4\frac{2}{5}$ l.; lat., $1\frac{4}{5}$ l

The yellow spots on the elytra are as follows:—One basal su circular, one marginal ante median much like the correspondi spot in *A. Samouelli*, one post median fasciaform but not near reaching the suture, one half-way between the last mentioned a the apex rotundate. The fig. of *A. dilutipes*, V. de Poll (Ti voor Ent. XXXII., pl. iii., fig. 17) would represent this spec if the spots near the middle of the suture were removed, t apical spots brought forward, and the legs differently coloured.

S. Australia; in the collection of C. French, Esq.

BUBASTODES (gen. nov.).

Bubasti similis sed antennis brevibus, foveis poriferis in artic orum facie interna positis; scutello perparvo.

I think this genus is allied to *Bubastes*, which it closely r sembles in its cylindric and robust appearance and general sty of colours, pattern, and sculpture; but its antennæ are those of *Chrysobothris*, and its scutellum is little more than punctifor In the example before me the basal ventral segment is lon tudinally sulcate.

B. sulcicollis, sp. nov. Robusta; subcylindrica; sat nitid supra vix perspicue, subtus sparsim breviter, pubescen obscure ænea, elytris viridibus (certo adspectu obscu cupreo-micantibus); capite convexo crasse ruguloso in med longitudinaliter carinato, clypeo antice fortiter emarginat prothorace quam longiori dimidio (postice quam anti quarta parte) latiori, late profunde canaliculato, crasse r crebre (latera versus sat crebre) umbilicato-punctulat lateribus fortiter rotundatis, margine antico leviter sinuat emarginato postico leviter bisinuato, angulis anticis acu vix productis posticis subrectis; elytris inæqualiter min fortiter punctulato-rugulosis, striatis, lateribus haud cren latis, ad apicem oblique obsolete emarginatis; corpore su tus in medio pedibusque sparsim crasse, illo ad latera creb magis subtiliter, punctulato-rugulosis. Long., $7\frac{1}{2}$ l.; la $2\frac{3}{5}$ l.

The description of *Castalia globithorax*, Thoms. (which i author thought might form a new genus), suggests the probabili of its being congeneric with this insect, but it is evidently n

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conspecific, as M. Thomson's species is said to have an impressed line on the head, and its prothorax "confertim punctulatus."

S. Australia.

NEOBUBASTES (gen. nov.).

Bubasti similis sed minus convexus, pronoti carina marginali fere integra.

This species is another ally of *Bubastes*, but incapable of being referred to that genus on account of the lateral carina of its pronotum (which in *Bubastes* is very short and entirely on the under surface) being well defined, visible from above, and continuous almost to the front margin. Beyond its somewhat less cylindric (though equally robust and scarcely less parallel) form I do not find any other character likely to be a generic distinction from *Bubastes*.

N. aureocincta, sp. nov. Robusta; sat parallela; minus convexa; sat nitida; setis albidis supra sparsissime subtus magis crebre, vestita; ænea, capite prothoraceque viridi cupreoque vix manifeste micantibus, elytris læte viridibus, marginibus basalibus lateralibusque splendide aureis, iris intus igneo-cupreo mutantibus; capite convexo crebre fortiter ruguloso-punctulato; prothorace quam longiori fere duplo (postice quam antice fere tribus partibus) latiori, supra æquali, crebre fortiter (fere ut caput sed antice magis subtiliter) ruguloso-punctulato, antice sinuato-emarginato postice bisinuato, lateribus sat rotundatis, latitudine majori ante medium posita, angulis anticis obtusis haud productis posticis fere rectis; scutello concavo; elytris quam prothorax vix latioribus, minus fortiter minus crebre (latera versus magis crebre magis rugulose) ruguloso-punctulatis, fortiter striatis, postice ad latera crenulatis, ad apicem rotundato-truncatis; corpore subtus pedibusque crebre fortiter (femoribus minus fortiter) punctulatis. Long., 8 l.; lat., 3 l.

Var. ? *scutalis* differt statura multo minore (long., 6 l.) corpore subtus pedibus capite prothorace læte cæruleis, hoc in disco obscuriori, scutello planato.

MacDonnell Ranges, Central Australia; in the collection of C. French, Esq. The var. ? *scutalis* is in my own collection, and was taken in S. Australia, but I do not know its habitat more exactly.

BUBASTES.

B. vagans, sp. nov. Cylindrica; minus nitida; obscure viridis, elytris obscure cupreo-purpureis, antennis femorum apice tibiis tarsisque igneo-cupreis; corpore subtus sparsim cinereo-pubescenti; capite inter oculos haud concavo, vertice linea subtili longitudinali impresso, crebre fortiter rugulose

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punctulato; prothorace quam longiori circiter tertia pa latiori, sat crebre (latera versus magis crasse rugulo punctulato; elytris crebre subtilius rugulose punctulat striatis, interstitiis inæqualiter convexis piceis sparsim ma fortiter punctulatis, apice emarginatis et bispinosis, Lon 9 l.; lat., $2\frac{4}{5}$ l.

A narrower and more elongate species than *B. inconsista* Thoms., with the sides of the prothorax quite straight a parallel from the base nearly to the front margin, and the di of the same much less closely punctulate. These same characte also furnish distinction from *B. globicollis*, Thoms. *B. sphenoid* L. & G., is said to have the prothorax canaliculate; in t other described species the head is concave or foveate betwe the eyes.

S. Australia; sent to me by Mr. Masters.

CURIS.

C. discoidalis, sp. nov. Sat elongata; sat convexa; nitid supra læte viridis, capite prothoracis disco et in elyt macula magna discoidali communi (hac a basi late, a mar inibus lateralibus minus late distanti) purpurascentibu corpore subtus femoribus tibiisque viridibus, antennis tarsi que purpurascentibus; capite longitudinaliter concavo, fo titer punctulato; prothorace transverso, vix canaliculat punctulato (antice in medio subtiliter, basin lateraque versu magis crasse), lateribus sat rotundatis; elytris postice rotun ato-truncatis, abdomen fere tegentibus, fortiter punctulati vix manifeste costatis, juxta latera striatis (interstitiis h subcarinatis), lateribus prope apicem apiceque denticulatis sternis sat æqualiter subfortiter nec crebre, abdomine fo titer sat crebre, punctulatis. Long., $5\frac{1}{2}$ l.; lat., 2 l.

Resembles *C. Peroni*, Fairm., and *despecta*, Fairm., in build but the elytra are not distinctly costate, and the middle of th prosternum is quite strongly punctulate, uniformly with th metasternum, but less coarsely than the side-pieces of the pr sternum. The purple colouring on the prothorax consists of wide median vitta (divided down the middle) occupying th middle one-third of the width; on the elytra it consists of large common spot triangularly emarginate in front (so that it front comes near the base at the shoulders, and on the suture i distant from the scutellum nearly a third of the length of th suture), and separated from the lateral margin on either side b nearly a third of the width of each elytron. In the type th green colour of the elytra is of a very rich pure shade in front but along the margins becomes golden and then coppery in ton hindward. The prothorax, compared with that of *C. caloptera*

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Boisd., is shorter, and has more strongly rounded sides; it is slightly narrower than the widest part of the elytra; it is extremely like that of the species which I believe to be *C. intercribrata*, Fairm., in all respects except in the median channel being scarcely marked. The puncturation of the elytra is very much stronger than in *C. caloptera*, Boisd.

W. Australia; near Yilgarn; in the collection of C. French, Esq.

CYRIA.

C. tridens, Blackb. In describing this species (vide supra, p. 41) I omitted to mention its habitat, which is Richmond River District, N.S. Wales. Mr. French tells me that it is the insect on which the name *C. gagates* was founded. It is impossible to form a decided opinion on the point by reading the *description*—which does not even mention the colour of the elytra (unless the term "nigra" applied to the insect in general is to be strictly applied to every part except the eyes—in which case there would be no reason to connect *C. tridens* with it)—but I have no doubt Mr. French's memory is trustworthy in the matter—and, indeed, I had thought of the question of identity with *gagates* when I described *tridens;* but it is of little consequence, for, as far as I can ascertain, no description of *C. gagates* has ever been published, the name occurring in a privately-circulated memoir of the late Rev. W. F. Hope. The species I named *tridens* is certainly distinct from *C. imperialis*, Don., of which *gagates* is said to be a variety.

HYPOSTIGMODERA gen. nov.

Gen. *Stigmoderæ* valde affinis; differt maris antennis biflabellatis.

The extraordinary insect on which I found this genus seems to be a perfectly typical *Stigmodera* in all respects except that the antennæ of the male are strongly biflabellate, resembling very closely those of the male in the *Elaterid* genus *Euphemus*; the antennæ of the female are those of an ordinary *Stigmodera*.

H. variegata, sp. nov. Minus elongata; supra cœruleo-nigra, elytris paullo pone basin fascia lata communi (et paullo ante apicem macula sat magna) testaceis ornatis; subtus sat læte cœrulea vix viridimicans, cum pedibus concolor; capite longitudinaliter sulcato sat crebre sat fortiter punctulato; prothorace quam longiori dimidio latiori, distincte (præsertim pone medium) canaliculato, quam caput paullo magis crebre minus fortiter punctulato; elytris postice bidentatis sat fortiter striatis, interstitiis sat crebre sat fortiter punctulatis 1° 3° 5° que (antice et postice sat fortiter in medio minus evidenter) quam cetera magis convexis, later-

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ibus haud denticulatis; corpore subtus sat fort (prosterno fortiter vix crebre, segmento ventrali api quam cetera multo magis fortiter magis crebre) punctul Long., 4½—4¾ l.; lat., 1½—1⅝ l.

This species is extremely like *Stigmodera bella*, Saund., in sh and sculpture; so much so that it would be difficult to spe any difference in these respects, except that each elytron is minated by two *almost equal* teeth, that the head is more elong and the ventral segments somewhat differently sculptured. markings of the elytra are very different from those of *S. be* consisting of a very wide common testaceous fascia commenc nearer to the base than that of *S. bella*, and extending nearl the middle of the elytra, with both its front and hind mar sinuous, and a testaceous spot on each elytron considerably be the apex (nearly round in the male example before me, tr versely elongate in the female), touching neither lateral mar nor suture.

Queensland; Darling Downs; in the collection of Mr. Fre

STIGMODERA.

S. cara, sp. nov. Mas. Sat elongata; splendide cuprea, ely testaceis, horum basi sutura (his anguste) apice et fasci (altera subbasali altera pone medium posita) purpureis p minusve viridi-tinctis, abdomine rufo-testaceo viridi-mica antennis viridibus; capite longitudinaliter concavo fort sat crebre punctulato; prothorace quam longiori dua partibus (postice quam antice fere duplo) latiori, inæqual punctulato (sc. basi media fortiter minus crebre, latera ver crebre rugulose, antrorsum gradatim magis crebre ma subtiliter), lateribus postice fere parallelis antice arcua convergentibus, basi subangulatim bisinuata, angulis ant acutis sat productis posticis sat rectis; elytris ad apic oblique sat minute emarginatis et biapiculatis, punctul striatis, interstitiis obscure transversim rugatis et subtili punctulatis, lateribus postice sat fortiter denticulatis, b subangulatim sinuata; corpore subtus breviter argent pubescenti; prosterno antice confertim rugulose (inter co grosse sparsim), metasterno fortiter minus crebre, abdom leviter crebre (segmento basali medio fortiter minus creb punctulatis. Long., 6¾ l.; lat., 2½ l.

Resembles *S. Burchelli*, L. and C. in size and shape, and in t puncturation, &c., of the upper surface; differing from it, ho ever, in the angulate sinuation of the base of the elytra, in t denticulate sides of the elytra near the apex, and the mu smaller apical emargination of the same. The dark fasciæ on t elytra are as follows:—A narrow bright-green base, a greeni

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purple fascia (very narrowly separated from the base) of moderate width, a narrower fascia of purple colour immediately behind the middle, and the apex to the extent of about one-seventh the length of the elytra. The testaceous greenish-glossed abdomen is very distinctive.

Queensland; Darling Downs; in the collection of Mr. French.

S. insignis, sp. nov. Depressa, minus angusta; supra niger, elytris mox ante medium fascia testacea nec marginem nec suturam plane attingenti et ante basin macula magna reniformi sanguinea marginem nec suturam attingenti ornatis, corpore subtus aureo viridi, pedibus antennisque cæruleis; capite longitudinaliter late profunde concavo fortiter minus crebe punctulato; prothorace trans basin quam longiori (et postice quam antice) paullo plus quam dimidio latiori, sparsim subtiliter punctulato, intra angulos posticos foveolato, antice fortiter emarginato, postice in media lobato, lateribus a basi ad apicem (vix arcuatim) angustatis; elytris postice angustato-productis, ad apicem late oblique emarginatis et bispinosis (spina externa majori), pone medium dilatatis, punctulato-striatis, interstitiis sublævibus alternis fortiter convexis, lateribus inermibus, basi late leviter convexa; corpore subtus sparsim pubescenti, sat fortiter minus crebre (retrorsum gradatim magis subtiliter magis crebre) punctulato. Long., 7 l.; lat., $2\frac{2}{5}$ l.

Near *S. producta*, Saund., but differing *inter alia* by the absence of a prothoracic channel and of a red spot near the base of each elytron. *S. acutipennis*, Thoms., is described as having a red spot near the base of each elytron. The subapical spot in the present species is kidney shaped, lying along the lateral margin for a distance equal to about a third of its length, with its two lobes directed towards the suture.

Victoria; taken by C. French, Esq.

S. filiformis, sp. nov. Elongata; parallela; minus convexa; glabra; læte viridis, capite prosternoque aureo-micans, elytris sanguineis ad basin anguste viridibus violaceo-ornatis (macula oblongo utrinque subhumerali, sutura apice excepto, fascia post-mediana sinuata communi margines haud attingenti, et macula communi, subapicali trilobata); capite prothoraceque crebre subtiliter (fere ut *S. sanguinolentæ*, L. and G) punctulatis; illo angusto fortiter producto, fere plano, in vertice canaliculato; prothorace quam longiori quinta parte (postice quam antice tertia parte) latiori, antice leviter emarginato, postice in medio late leviter lobato, lateribus leviter arcuatis; elytris ad apicem leviter oblique emarginatis et biaculeatis, punctulato-striatis, interstitiis

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sparsim punctulatis antice planis postice convexis, lateril inermibus; corpore subtus subtilius sat sparsim (proste lateribus crebre rugulose, metasterno subfortiter) punc latis. Long., $4\frac{1}{2}$ l.; lat., $1\frac{2}{5}$ l.

A slight dilatation of the suture opposite the subhumeral sp suggests the possibility that there may be varieties of this spec in which the subhumeral spots are joined to the suture. No of the violet markings on the elytra touch the suture. T subapical common spot resembles a club (in a pack of card with one of the lobes directed towards the apex and one spread out on each elytron. This is an exceptionally narrow elong species; compared with *S. sanguinolenta* (apart from very differe markings) its head is narrower and more produced, its form c siderably narrower, its underside glabrous and much less clos punctured, &c. Its very narrow form and glabrous undersurf at once distinguish it from *amphicroa*, Boisd., its scarc transverse prothorax from *Sieboldi*, L. and G.

W. Australia; in the collection of C. French, Esq.

S. capucina, sp. nov. Minus convexa, sat lata; supra ru capite prothoracis marginibus et macula magna ant (hac cucullum simulanti) scutello elytrorumque basi sum et apice summo æneis, corpore subtus antennis pedibus æneis, abdominis lateribus flavomaculatis, hujus segme apicali postice toto flavo; capite medio canaliculato crebre sat fortiter (fere ut *S. Brucki*) punctulato, oculis remotis; prothorace minus nitido, quam longiori tribus pa ibus (postice quam antice duplo) latiori, inæqualiter crebre rugulose (fere ut *S. Stevensi* sed paullo minus ru lose) punctulato, fere æquali, linea mediana fere lævi, ant sinuatim emarginato, postice subbisinuato, lateribus forti rotundatis, latitudine majori mox pone medium posi elytris ad apicem rotundatis, pone humeros leviter sinua fortiter sat æqualiter punctulato-striatis, interstitiis conve sparsim punctulatis, lateribus inermibus, basi fere trunca corpore subtus fere glabro; prosterno confertim rugul (processu prosternali sparsim subtiliter excepto), metaste abdomineque ad latera crebre rugulose (metasterno me sparsim subtiliter, abdomine medio sat crasse minus creb punctulatis; metasterno medio profunde longitudinali sulcato. Long., 13 l.; lat., 5 l.

Near *S. Wimmeræ*, Blackb., but narrower, with the base of elytra almost perfectly straight, also the colours different.

W. Australia; in the collection of C. French, Esq.

S. regia, sp. nov. Modice convexa; sat lata; subparallela; elongata; capite viridi, prothorace fere nigro ad latera l

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aurantiaco, elytris in parte dimidia antica aurantiacis fascia communi lata cyaneo-nigra (hac margines haud attingenti) ornatis, in parte dimidia postica cyaneo-nigris utrinque macula transversa aurantiaca ornatis, corpore subtus in medio pedibusque læte viridibus (illo ad latera aurantiaco), segmentis ventralibus intermediis ad latera macula parva viridi utrinque ornatis, segmento ventrali apicalitoto aurantiaco (hoc postice in medio viridi); capite leviter convexo crebre (fere ut *S. variabilis*) punctulato, vertice linea longitudinali impresso, oculis sat approximatis; prothorace quam longiori et postice quam antice tribus partibus latiori, fere ut *S. variabilis* sed paullo minus rugulose punctulato, antice leviter sinuatim emarginato, postice subbisinuato, lateribus a margine antico fere ad basin arcuatim divergentibus, latitudine majori paullo ante basin posita; elytris ad apicem ut *S. variabilis* truncato-emarginatis, pone humeros sat fortiter sinuatis, antice leviter postice magis fortiter punctulato-striatis, interstitiis sparsim subtiliter punctulatis, alternis foveolatis, alternis postice angustioribus magis convexis, lateribus inermibus, basi sinuato-truncata; corpore subtus ad latera crebre subtilius (metasterno coxisque posticis creberrime subtiliter) in medio sparsim punctulato; pectore sat hirsuto, metasterno medio profunde longitudinaliter sulcato. Long., 16 l.; lat., $6\frac{1}{2}$ l.

The markings on the elytra are extremely like those of *S. Fortnumi*, Hope, but with the dark colour much more obscure, the front dark fascia more produced forward on the shoulder, the median dark fascia much narrower and the postmedian orange spot less strongly transverse in form; the prothorax also is almost exactly like that of *S. Fortnumi* in shape and sculpture; the general form much narrower and more parallel, the apices of the elytra much less straightly truncate and less strongly spined, the alternate interstices of the elytra foveolate, &c., will separate this species from *Fortnumi*. It also resembles some forms of *S. variabilis*, Don., from which it is at once distinguished by its prothorax much more narrowed anteriorly and therefore appearing to a casual glance less transverse. The example before me is a female, and therefore is compared above with females of *Fortnumi* and *variabilis*.

N. Queensland; in the collection of C. French, Esq.

S. ignea, sp. nov. Minus lata; minus depressa; igneo-cuprea, elytris testaceis, sutura (hac pone medium bis dilatata) et in elytris singulis linea obliqua subhumerali maculaque sublaterali pone medium posita viridibus; capite sat elongato fortiter sat crebre punctulato, longitudinaliter profunde concavo; prothorace

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quam longiori (et postice quam antice) fere duabus partibus latiori, fortiter sat crebre (antice magis subtiliter, latera versus rugulose magis crebre) punctulato, antice bisinuatim vix emarginato, lateribus sat rotundatis, basi media late obsolete lobata, angulis posticis fere rectis; elytris sat fortiter striatis, striis vix distincte punctulatis, interstitiis leviter convexis obscure punctulatis, ad apicem oblique leviter emarginatis, lateribus postice denticulatis; corpore subtus setis brevibus crassis sparsim vestito, crebre sat fortiter (sternis in medio magis fortiter sat sparsim exceptis) punctulato. Long., $5\frac{1}{2}$—6 l.; lat., 2—$2\frac{1}{5}$ l.

The green markings on the elytra appear black in a certain light; the sutural colouring is dilated considerably on either side of the scutellum, and is dilated into a large spot a little behind the middle, and into a small one just before the apex. The post-median sublateral spots are level with the larger dilatation of the suture.

S. Australia.

S. dawsonensis, Blackb. I think this will probably prove to be a var. of *S. liliputana*, Thoms.; it is, however, so unlike the type in respect of its markings that it may well retain a distinctive name.

AGRILUS.

A. Terræ reginæ, sp. nov. Læte viridis, elytrorum vitta subsuturali mesosterno metasterni lateribus et abdominis parte dorsali superiori aureo-pulvinatis; capite (antice transversim, postice longitudinaliter) rugato; prothorace sat transverso postice angustato, minus fortiter canaliculato, transversim crebre rugato; elytris confertim subtiliter subrugulosis, apice rotundatis. Long., 3 l.; lat., $\frac{4}{5}$ l. (vix).

Queensland; sent to me by Mr. Masters.

MALACODERMIDÆ.

SELENURUS.

S. variegatus, sp. nov. Elongatus; capite (hoc ante oculos flavo-notato) palpis pedibus segmento apicali scutello antennisque nigris (harum articulis 8° 9° que plus minus albidis); prothorace nigro, trans basin flavo (parte nigra retrorsum carinam in partem flavam utrinque emittenti); elytris cæruleis flavo-bifasciatis, fascia altera antemediana communi arcuata altera postmediana forma variabili, segmentis dorsalibus postice late flavis, corpore subtus flavo plus minusve nigro-notato; mandibulis appendiculatis nec intus dentatis; antennis quam corporis dimidium paullo longioribus (maris) vel paullo brevioribus (feminæ) subfiliformibus, articulo 2°

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minimo, quam hic 3° duplo longiori, quam 3^us ceteris fere duplo longioribus inter se sat æqualibus; oculis modice prominulis; capite prothoraceque crebre subtilissime punctulato, illo medio planato; palporum maxillarium articulo ultimo præcentibus 2 conjunctis æquali, leviter obtuse elongato—subcultriformi; prothorace quam longiori vix latiori, plus minusve perspicue canaliculato; elytris crebre rugulosis, abdominis segmenta apicalia 2 vel 3 aperientibus, postice plus minusve dehiscentibus, apice singulatim rotundatis; pedibus elongatis sat gracilibus, tarsorum posticorum articulo basali quam sequentes 2 conjuncti vix breviori; unguiculis granulo basali setifero subtus munitis.

Maris segmento apicali filamento contorto testaceo utrinque instructo; mandibulis extus testaceis. Long., $4\frac{1}{2}$– $6\frac{1}{2}$ l.; lat., $\frac{4}{5}$—$1\frac{3}{5}$ l.

The above detailed account of the structural characters is rendered necessary by the brevity of the generic diagnosis of *Selenurus*, which omits *inter alia* all reference to sexual characters. The species before me seems to differ from *Ichthyurus* by its mandibles (which are truncate close to the apex, and have a short acute appendiculate piece attached to the outer part of the truncate end) by its longer and less dehiscent elytra, and by the intermediate legs devoid of sexual character. I suspect it is congeneric with *Ichthyurus depressicollis*, Macl.

N. S. Wales; Blue Mountains.

S. sydneyanus, sp. nov. Elongatus; capite nigro (maris antice flavo, feminæ ad antennarum basin flavo-maculato), mandibulis flavis, antennis palpisque nigro-piceis (illarum articulis basalibus subtus rufis), prothorace flavo antice fascia nigra ornato, elytris obscure viridibus, pedibus nigro-piceis (tibiis anticis plus minusve dilutioribus), corpore subtus sordide flavo (metasterno medio nigro et abdomine plus minusve piceo-notato); prothorace haud canaliculato; elytris abdominis segmenta apicalia 3 vel 4 aperientibus; cetera ut *S. variegati*. Long., 2—$3\frac{1}{2}$ l.; lat., $\frac{2}{5}$—$\frac{3}{5}$ l.

This species is evidently congeneric with the preceding. I find no difference in its structural characters.

N. S. Wales; in the suburbs of Sydney.

HETEROMASTIX.

H. anticus, sp. nov. Mas. Niger, capite prothorace antennis palpis pedibusque læte rufo-testaceis; pubescens; capite prothoraceque nitidis vix perspicue punctulatis; hoc transverso antice vix angustato, lateribus leviter arcuatis; elytris

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crebre minus fortiter punctulatis; antennis quam corpus sa brevioribus, sat robustis, articulis 3-5 sat dilatatis.

Feminæ antennarum articulis 3-5 haud dilatatis, articul singulis apicem versus infuscatis. Long., $1\frac{4}{5}$ l.; lat., $\frac{3}{5}$ l.

In one of the male examples before me the base of the hin femora is lightly infuscate. Easily distinguished from its alli by the entirely bright rufous colour of the head, prothora antennæ, palpi, and legs—except the base of the hind femora a mentioned above.

N. S. Wales; Blue Mountains.

H. dilataticollis, sp. nov. Niger, antennarum basi prothora pedibus anticis tibiisque ceteris testaceis; pubescens; capit prothoraceque alutaceis; hoc transverso ante medium fo titer angulatim dilatato; elytris crebre rugulose sat sul tiliter punctulatis; antennis sat gracilibus quam corpus sa brevioribus. Long., $1\frac{4}{5}$ l.; lat., $\frac{3}{5}$ l.

Near *Telephorus pusio*, Gemm. (which is, I think, a *Heteromastix* but differing from it by its larger size, the testaceous colour o the basal three joints of its antennæ, the entirely testaceou front legs, the testaceous hinder four tibiæ, and the stronge angular dilatation of the sides of its prothorax. I have bot sexes of *H. pusio* before me, which differ little *inter se* except i the usual different shape of the apical ventral segment and th longer and stouter antennæ of the male.

N.S. Wales; Blue Mountains.

CLERIDÆ.

LEMIDIA.

L. pictipes, sp. nov. Minus elongata; fulvo pubescens et set erectis obscuris vestita; nigra, subcyanea, capite antic antennis (apice piceo excepto) femoribus anterioribus genubus posticis et tibiis anticis flavis, prothorace rufo prothorace sublævi, leviter transverso, lateribus fortite rotundatis; elytris grosse nec seriatim punctulatis. Long $1\frac{3}{5}$ l.; lat., $\frac{7}{10}$ l.

N.S. Wales; Blue Mountains.

L. simulans, sp. nov. Minus elongata; pallide pubescens e setis erectis obscuris vestita; nigra: capite antice, palpi antennis, elytrorum basi macula communi subbasali (cui basi connexa) maculaque postmediana (hac suturam vi marginem lateralem nullo modo attingenti), pedibusqu (horum tibiis tarsisque posticis infuscatis), flavis; capit prothoraceque sparsim sat grosse punctulato; hoc quan latiori vix longiori, lateribus fortiter rotundatis; elytri grosse seriatim punctulatis. Long., $2\frac{2}{5}$ l.; lat., $\frac{4}{5}$ l.

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Resembles *L. bella*, Westw., in the markings of the elytra, but, *inter alia*, is a less elongate species, with the prothorax black and sparsely sprinkled (together with the hind part of the head) with large coarse punctures.

S. Australia; Port Lincoln.

L. munda, sp. nov. Sat elongata; setis brevibus et nonnullis valde elongatis sat sparsim vestita; picea, capite antennis palpis prothorace et pedibus anticis plus minusve flavescentibus; elytris in parte dimidia basali læte brunneis, fasciis binis angustis (sc. altera basali altera mediana) niveis nitidis ornatis; capite prothoraceque fere lævibus; illo inter oculos fortiter biimpresso; hoc quam latiori longiori, pone apicem valde constricto lateribus fortiter rotundatis; elytris sparsim grosse (apicem versus magis etiam sparsim) punctulatis; pedibus valde gracilibus elongatis. Long., $1\frac{3}{5}$ l.; lat., $\frac{1}{2}$ l.

A remarkable looking little species on account of its very long slender legs resembling those of a *Clytus*, the hind femora reaching back beyond the apex of the hind body. The colouring too is peculiar, more or less yellowish in front of the elytra, with the front half of those organs pale-brown, and the other half nearly black, a raised shining-white ivory-like fascia across the middle, and a somewhat similar one (but not raised) across the base. The constriction across the front part of the prothorax is unusually strong.

S. Australia; Port Lincoln.

L. soror, sp. nov. Minus elongata; setis minus elongatis et nonnullis valde elongatis pallidis sat sparsim vestita; nigra, capite antennis pedibus anterioribus 4 (his nonnullis exemplis plus minusve infuscatis vel rufescentibus), et elytrorum basi apice fasciaque mediana flavescentibus; capite prothoraceque fere lævi; hoc quam longiori vix latiori, lateribus fortiter rotundatis; elytris grosse seriatim punctulatis. Long., $1\frac{4}{5}$—$2\frac{1}{5}$ l.; lat., $\frac{3}{5}$—$\frac{4}{5}$ l.

Much like *L. concinna*, Gorham, but with an apical spot on the elytra, the median fascia yellowish and not raised above the surface, and the surface bearing fairly regular rows of large conspicuous punctures.

S. Australia; Port Lincoln; also near Petersburg.

L. pulchella, sp. nov. Minus elongata; fulvo-pubescens et setis elongatis obscuris vestita; nigra; antennarum basi, prothorace (macula magna antica picea excepta) et abdomine (apice excepto), rufis; tibiis tarsisque anterioribus 4 obscure rufescentibus; elytris læte viridibus; capite (parte media inter oculos fere lævi excepta) sat crebre punctulato, inter oculos profunde biimpresso, prothorace quam longiori vix

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latiori, sparsissime sat fortiter punctulato, lateribus fort rotundatis; elytris confertim subfortiter subrugulose pu ulato. Long., $2\frac{1}{2}$ l.; lat. 1 l. (vix).

A very beautiful species, perhaps nearest (but not very near *L. biaculeatus*, Westw.

Victoria; Alpine district.

L. angustula, sp. nov. Fere filiformis; pallide pubescens, et s elongatis obscuris vestita; nigra; capite, antennis, pal prothorace, pedibus anticis, genubus tibiis tarsisque in mediis, et elytrorum basi apice maculisque binis postmedia linearibus obliquis, rufo-testaceis; capite leviter obscure, thorace minus perspicue, punctulatis; hoc quam lat paullo longiori, lateribus minus fortiter rotundatis; ely sat crebre sat grosse seriatim punctulatis. Long., $2\frac{2}{5}$ lat., $\frac{3}{5}$ l.

A remarkably narrow and elongate species, not very near think, to any previously described.

Victoria.

L. leoparda, sp. nov. Minus elongata; sparsim nigro-hir nigra, capite prothorace elytris abdomineque rufis, ely maculis 7 (ex his una communi) nigris ornatis et ad apic nigro-marginatis; capite prothoraceque sparsissime pun ulatis; hoc quam longiori vix latiori, pone apicem va constricto, lateribus fortiter rotundatis; elytris obsolete seriatim punctulatis.

Var.? *nigritula*, differt capite prothoraceque nigris, anten palpis pedibus anticis et femoribus posterioribus 4 fla elytris pallide testaceis (ut typi nigro-maculatis). Lon $2\frac{4}{5}$ l.; lat., $1\frac{1}{5}$ l.

The black spots on the elytra are a large common diamon shaped spot on the middle of the suture, and three on each elytr near the lateral margin (the first on the shoulder round, the n about the middle oval, the last elongate near the apex and tou ing the lateral margin), successively larger hindward. The va is in the collection of Mr. French; though coloured so extrem differently from the type, it presents absolutely no other differe that I can discover.

Victoria.

TENEBRIONIDÆ.

ISOSTIRA.

The following species may for the present be attributed to th genus, although it will likely enough be regarded eventually generically distinct. Mr Pascoe (Ann. Nat. Hist., 1870) chara erised *Isotira* very briefly by saying that it agrees wi

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Hopatrum in the form of its maxillary palpi, its elytra closely fitted to the prothorax and its incomplete elytral epipleuræ, but differs in its entire clypeus and transverse non-sinuate labrum. The insect before me (which I have received from Mr. Masters) agrees with this description, and is evidently very near to *Hopatrum*. But in his description of the typical species, Mr. Pascoe says that the eyes are nearly entire; in that respect Mr. Masters' insect differs much, the ocular canthus cutting into the eyes scarcely if at all less deeply than it does in *Hopatrum*.

I. raucipennis, sp. nov. Glabra; nitida; alata; obscure brunnea, corpore subtus pedibus antennisque rufescentibus; capite prothoraceque crebre fortiter granuloso-ruguloso; illo intra oculos utrinque carinato; prothorace quam longiori circiter duplo latiori, antrorsum fere a basi leviter arcuatim angustato, antice valde emarginato in medio late leviter producto, fortiter sat late canaliculato, lateribus fortiter crenulatis, angulis anticis sat acutis posticis subrectis, basi media late lobata; elytris punctulato-sulcatis, interstitiis carinatis seriatim tuberculatis; tibiis sat gracilibus ad apicem summum angustatis: corpore subtus fortiter punctulato (prosterno quam cetera segmenta magis crasse). Long., 3 l.; lat., $1\frac{2}{5}$ l.

Apparently with a good deal of general resemblance to *I. crenata*, Pasc., but differing from it (besides in the shape of the eyes already alluded to) *inter alia* by the puncturation of the head, which is said to be in *crenata* "rather finely and closely punctured on the vertex," the tuberculate elytra, &c. The well-defined rows of tubercles on each elytron are eight in number; between the last of these and the external margin is a space on which the sculpture is somewhat confused, but bears at least one fairly defined row of tubercles.

Queensland.

PLATYPHANES.

P. creber, sp. nov. Oblongus; parallelus; glaber; sat nitidus; niger, elytris æneis, pedibus picescentibus; capite antice distincte punctulato postice et pone oculos subtiliter granulato; prothorace quam longiori duplo (postice quam antice fere quarta parte) latiori, leviter fere obsolete nec crebre punctulato, toto marginato, antice profunde arcuatim emarginato, lateribus leviter sinuato-arcuatis, basi media lobata, angulis anticis fortiter productis nec acutis posticis acutis dentiformibus; elytris conjunctim quam prothorax dimidio latioribus, ad apicem sat anguste rotundatis, minus convexis, singulis striis circiter 14 impressis, striis inæqualiter nec grosse cancellato-punctulatis, latera versus striis nec

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puncturis gradatim obsoletescentibus, prope apicem striis puncturisque obsoletis; antennis prothoracis basin attingentibus, articulis 8-11 moniliformibus; sternis in parte majori lævigatis; abdomine confertim subtiliter punctulato; elytrorum epipleuris integris; prosterno antice compresso-carinato; abdominis processu intercoxali antice sat late rotundato. Long., 13 l.; lat., $5\frac{3}{5}$ l.

This is the largest species yet described of the genus. Of the species approaching it in size *oblongus*, Waterh., and *Godeffroyi*, Haag-R. (which I suspect are identical), are both described as having *ten* rows of punctures on each elytron—this having 14 rows—while *gibbosus*, Westw., is very differently shaped, having the elytra very strongly convex—or rather gibbous—behind the scutellum.

N. Queensland; in the collection of C. French, Esq.

CHARTOPTERYX.

C. victoriensis, sp. nov. Ovata; setis nigris erectis vestita; nitida; nigro-ænea, elytris cupreo cyaneoque intermixtis micantibus; capite inæqualiter punctulato, clypeo antice truncato; prothorace quam longiori fere duplo (postice quam antice dimidio) latiori, in medio sparsissime ad latera crebre sat fortiter punctulato, antice profunde arcuatim emarginato, lateribus leviter sinuato-arcuatis, basi media lobata, angulis anticis fortiter productis sat acutis posticis acutis dentiformibus; elytris pone scutellum conjunctim gibbosis, quam prothorax plus quam dimidio latioribus, ad apicem anguste rotundatis, confuse inæqualiter nec crebre foveolatis, foveis apicem versus obsoletescentibus, lateribus ante apicem fortiter sinuatis; antennis prothoracis basin longe superantibus, articulis 9-11 brevibus; corpore subtus in medio vix perspicue ad latera crebre subtiliter punctulato; elytrorum epipleuris rugulosis haud plane integris; prosterno antice compresso-carinato; abdominis processu intercoxali antice lato rotundato; tarsorum posticorum articulo basali quam cetera conjuncta manifeste breviori. Long., $7\frac{3}{5}$ l.; lat., $3\frac{4}{5}$ l.

Somewhat resembling *C. Childreni*, Westw., but *inter alia* without the areolar sculpture of the apical part of the elytra.

Mountains of Victoria; in the collection of C. French, Esq.

CARDIOTHORAX.

C. æripennis, sp. nov. Mas. Oblongo-ovalis; niger, elytris sat nitidis subauratis; capite prothoraceque sparsim subtilissime punctulatis; illo sat lato antice late rotundato; prothorace sat transverso, sat fortiter canaliculato et foveolis nonnullis impresso, antice sat fortiter arcuatim emarginato, lateribus

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fortiter rotundatis mox ante basin rectis et sat late deplanatis, parte deplanata a disco sulco profundo (hoc postice obsoleto) divisa et antice carina obliqua instructa, basi subangulatim emarginata quam apex parum angustiori, angulis anticis subacutis posticis valde acutis vix extrorsum directis, margine integro; elytris æqualiter profunde sulcatis, supra subplanatis, lateribus sat abrupte declivibus, humeris obtuse angulatis antrorsum sat prominentibus, interstitiis æqualibus fortiter convexis; femoribus inermibus; tibiis anticis modice dilatatis et subtus denticulatis, posticis sat fortiter dilatatis flexuosis, externe concavis. Long., $6\frac{3}{5}$ l.; lat., $2\frac{1}{5}$ l.

Isolated from its congeners by the following characters in combination:—Femora of male unarmed, foliaceous margins of prothorax moderately wide (about the width of one-sixth of the disc), surface nitid, elytra strongly and evenly striated, hind angles of prothorax extremely prominent and acute, hind tibiæ of male strongly compressed and flexuous. It may be remarked that *C. simulans*, Haag-Rutenberg, is founded on a female; and the description, moreover, being a very bad one, omitting nearly all important characters, it is difficult to form a clear idea of what that insect is; but the expression "lang herzförmig" applied to its prothorax certainly does not fit the prothorax of this species, the width of which is just about once and two-thirds the length down the middle line. In Mr. Bates' tabulation of *Cardiothorax* (E.M.M., 1879, pp. 32, &c.) the present insect would stand beside *Castelnaudi* and *grandis*, from both of which the even striation of its elytra distinguishes it. The greatest width of the prothorax is exactly equal to that of the elytra by measurement, but to a casual glance the prothorax appears slightly wider. A strong character, if constant, is the oblique carina running across the foliaceous margins of the prothorax near the front, and cutting off the front angles.

N.S. Wales; Blue Mountains.

DÆDROSIS.

D. monticola, sp. nov. Elongata; sat nitida; capillis paucis hic illic vestita; nigra, tarsis et antennarum apice summo castaneis; capite subfortiter minus crebre punctulato, postice spatio pentagonali impresso, prothorace leviter transverso, crebre subtilius punctulato, postice paullo angustato, lateribus vix perspicue crenulatis; elytris profunde crenato-striatis, interstitiis sat planis, haud transversim rugulosis vix perspicue punctulatis; tibiis posticis rectis, tarsis anticis (? maris solum) fortiter dilatatis. Long., 5 l.; lat., $1\frac{1}{2}$ l. (vix).

Distinguished at once from its previously-described congeners by the very much finer puncturation of its prothorax and the

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almost lævigate interstices of its elytra. The long hairs on its surface are very few and far between, and need looking for. The crenulations of the sides of the prothorax are very feeble.

N.S. Wales; Blue Mountains.

SEIROTRANA.

S. major, sp. nov. Oblongo-ovalis; sat convexa; sat nitida; ænea; prothorace sat dense longitudinaliter strigoso et fortiter punctulato, antice sat fortiter emarginato, lateribus fortiter rotundatis postice coarctatis; elytris lineis 4 interruptis elevatis instructis, interstitiis biseriatim fortiter punctulatis et tuberculis parvis nonnullis instructis. Long., 9 l.; lat., 4 l.

Very like *S. catenulata*, Boisd., but much larger, of a bright (almost nitid) brassy colour, decidedly convex in form, with the prothorax less strongly emarginate in front, the surface of the same marked with less closely-placed elevated lines, leaving the puncturation much more conspicuous, and the sides more strongly rounded and less strongly toothed, and the interstices of the elytra with larger punctures in the geminate series with small pustules (not placed in regular order one in front of each puncture but) very sparingly placed at distant intervals. The hind angles of the prothorax are considerably less sharply defined than in *S. catenulata*. The other large species described differ from this insect, *inter alia*, in having the sides of their prothorax entire. The basal four joints of the front tarsi in the example before me are all strongly transverse.

N.S. Wales; taken near Tamworth by Mr. Musson.

MELOIDÆ.

HOPLOZONITIS (gen. nov.)

A Zoniti differt palpis multo magis robustis; capite sat brevi; antennis (? maris solius) prothoracis basin haud multo superantibus femoribus posticis (? maris solius) valde incrassatis, subtus fortiter 4-dentatis et ad tibiarum receptionem sulcatis, tibiis posticis valde compressis et curvatis; unguiculorum lobo superiori in parte basali sola denticulato, lobo inferiori pergracili subclavato.

The heteromerous tarsi, bifid claws and head divided from the prothorax by a distinct neck, place this genus in the *Meloidæ*: its elongate metasternum, normal maxillæ, clypeus produced beyond the insertion of the antennæ, elytra reaching the apex of the abdomen, nonclavate antennæ, claws denticulate along the basal part of their superior lobe and oval apical joint of the palpi associate it with *Zonitis*, from which it is at once dis-

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tinguished by its hind legs resembling those of a *Haltica* (at any rate in one sex) with two large teeth on either side of the underside of the femora near their apex.

H. mira, sp. nov. Elongata; sat parallela; rufa, antennis palpis femorum apice tibiis tarsisque nigris; capite prothoraceque subtiliter minus sparsim punctulato; hoc quam longiori plus quam dimidio latiori, postice truncato antice emarginato, lateribus sinuatis, disco utrinque (exempli typici) late obscure impresso; elytris obscure sat crebre rugulosis, obsolete 4-costatis, apice late rotundatis. Long., 8 l.; lat., $2\frac{4}{5}$ l.

The elytra are of very thin texture, and have dried (in the typical example) in a more or less distorted condition, but they are as long as the hind body, and are wide enough at the apex to cover the same; probably, however, their normal condition is to be somewhat open.

Queensland; Cape York; in the collection of C. French, Esq.

CURCULIONIDÆ.

MANDALOTUS.

This genus founded by Erichson in 1842, and of which he described no less than four species—all from Tasmania—seems to have been a difficulty to subsequent authors. Schönherr does not appear to have expressed any opinion about it; Lacordaire places it among a group of genera which he thought might appertain to the *Eremnides*, but of which he had never seen a type; Pascoe expresses no opinion, but merely remarks that he has never seen *Mandalotus*.

Starting from the consideration that it is extremely unlikely Erichson had four congeneric species from Tasmania which no one has since seen, I have recently been examining the Tasmanian *Curculionidæ* (of which there are a considerable number) in my collection, to endeavour to identify *Mandalotus*, and I feel no doubt I have succeeded, and that it is identical with the genus which Pascoe has since named *Dysostines*. A *Dysostines* from Tasmania, in my collection, agrees perfectly well with Erichson's generic characters for *Mandalotus*, and is not improbably the species Erichson calls *sterilis*, though on this latter point I feel some doubt. *Dysostines* presents every character that Erichson attributed to *Mandalotus*, and the diagnosis is a very full one, although, as might be expected in a diagnosis published before Schönherr's work, two of the characters of chief classificatory value (viz., the visibility of the maxillæ and the non-contiguity of the front coxæ) are passed over in silence. I think, therefore, that the name *Dysostines* must be treated as a synonym of *Mandalotus*, and that *Mandalotus* must be removed from the

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Eremnides, and placed among the *Rhyparosomides*, where I has placed *Dysostines*.

EREMNINI.

This aggregate of species is distinguished from the *Lept* by M. Lacordaire by only one character that is stated as co and reliable, viz., that the rostral scrobes are not directed ward. This character, although slight, is one that (at any r many *Curculionidæ*) seems to be an important one, *i.e* direction of the scrobes does not seem to vary so much as other characters do in species that seem to be in reality c related to each other. It must be confessed, however, th does not appear to be so satisfactory in its application t Australian *Eremnini* (at least those known to me) as mig wished, since its application distributes between two subfa species that certainly do not seem as if they ought to widely separated. Among the *Adelognathi* furnished with lobes in my collection are three species whose scrobes ar directed downward, that is, the lower margin of the scro continued hindward, would not pass beneath the eye, but cut it, or at least touch its lower extremity. In one of the head exactly agrees with the figure of the head of *Pephric* Tr. Ent. Soc. Lond., 1870, pl. v., fig. 72; in the other tw scrobe is placed still higher. Apart from the structure o scrobes these species have decidedly the facies of small *L sini*, but that structure certainly seems to require their referred to the *Eremnini*.

As regards the genus to which these species should be ref I think they might, with fair reason, be treated as represe two new genera, as their facies is distinctly of two types and different from that of the already-named Australian *Erem* But as things stand at present—only a very small proporti the Australian *Curculionidæ* having been described—it see me that new genera should be formed only very reluctantly where there is some extremely salient structural character lutely requiring it, as the examination of a long series of sp in many instances, shows that characters apparently very factory in themselves are nevertheless of little value. example of this I may mention the number of claws on the Mr. Pascoe has, very naturally, regarded the absence of the two claws as a good generic character in the *Eremnin Leptopsini*; nevertheless, I have before me specimens throw great doubt on its value, presenting in a number of *Polyphrades*-like species a *gradual* change in this respect, b ning with the evidently *two* soldered claws of a typical *phrades*, then passing to a form in which the two claws are

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closely soldered, and only split apart as mere points at the apex, then to a form in which the hind tarsi or the four posterior tarsi have only one claw while the claws of the front tarsi are distinctly double at their extreme point, and ending with forms in which no duality can be discerned in any of the claws.

Still, as genera have already been formed on the number of claws as their principal character, it will for the present be convenient to regard this as a *generic* character, and as only a single *Eremnid* genus is recorded to have a single claw, I think it will be well to refer to that genus *(Pephricus)* all the Australian *Eremnini* having only a single claw unless they differ from the diagnosis of *Pephricus* in some character really of first-class importance. I take then the following to be the distinctive characters of *Pephricus* as a genus :—Rostrum separated from the head on the underside by a deep transverse sulcus; antennæ shortish and more or less stout, with a funicle of 7 joints; scutellum not, or scarcely, apparent; femora unarmed; a single claw only to the tarsi; metasternum very short; basal two ventral segments sub-equal, *inter se*, the next two much shorter; hind corbels open. Thus characterised the genus *Pephricus* may receive the following two species :—

PEPHRICUS.

P. umbratus, sp. nov. Obscurus, squamis albidis fuscis et nonnullis nigricantibus indeterminate crebre vestitus: vix manifeste setosus: rostro antrorsum angustato supra sat plano: scrobibus supernis; oculis ovalibus infra paullo acuminatis; prothorace quam longiore tertia parte (postice quam antice parum manifeste) latiori, lateribus modice arcuatis; scutello vix distincto; elytris quam prothorax tertia parte latioribus, plus quam duplo longioribus basi emarginatis, leviter striatis, striis, sat fortiter punctulatis, lateribus sat rotundatis, latitudine majori paullo pone basin posita. Long., 2—2½ l.; lat., 1—1⅓ l.

This species differs from the two previously described by not being clothed with long setæ. The antennæ are short and stout; set back they would about reach the base of the prothorax; the scape reaches the back of the eye; joints 1 and 2 longer than wide, 1 longer than 2, 3—7 transverse, the club short and stout obovate; the head rostrum and front of prothorax viewed from the side are exactly represented in the figure of *P. echymis*, Pasc. (Tr. Ent. Soc., tab. v., fig. 72.) Viewed from above the rostrum is gradually narrowed forward, its lateral margins forming the upper margins of the scrobes, the whole of which are visible when the rostrum is looked down upon from above. The actual base of the elytra is the same width as the base of the prothorax, but

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the elytra are quickly dilated behind the base ; the shoulders are distinctly marked. The legs are more or less reddish, the anterior tibiæ denticulate within. There are no defined markings, the whitish, fawn-colored, and darker scales shading off one into another ; but the paler shades predominating at the sides more or less distinctly. The sculpture of the upper surface (except the punctulate striæ of the elytra) is completely hidden by the scales.

Western Australia ; taken by E. Meyrick, Esq.

P. squalidus, sp. nov. Obscurus ; indumento terreo indutus ; setis brevibus adpressis rufis sparsim vestitus ; rostro sat plano, parte superiori in medio valde constricta ; scrobibus plane supernis fere rotundatis ; oculis subrotundatis ; prothorace quam longiori (et postice quam antice) vix latiori, lateribus sat rotundatis ; scutello haud manifesto ; elytris quam prothorax fere dimidio latioribus paullo plus quam duplo longioribus, basi emarginatis, striatis, striis minus distincte punctulatis, interstitiis postice sat convexis, lateribus modice rotundatis. Long., $1\frac{4}{5}$—$2\frac{1}{2}$ l. ; lat., $\frac{4}{5}$—1 l.

Usually completely covered with an earthy-looking indumentum, which it is almost impossible to remove without removing the underlying scales, but (as far as I can see) the insect without the indumentum is densely clothed with scales of various shades of brown, some of them bright, and almost coppery. The most distinctive character consists in the remarkable sculpture of the rostrum, in which the scrobes look like roundish holes inserted in the upper surface, and separated from each other by a space less than a third part the width of the whole rostrum, as viewed from above. The space between them has a little the appearance of being compressed into a kind of *ridge*, as though the true upper surface of the rostrum were here very narrow ; this quasi-ridge being at its narrowest at the hind end of the scrobes, and its sides diverging from that point forward (at the same time forming the inner edge of the scrobes). The head, rostrum, and front of prothorax, viewed from the side) are almost as in the preceding species ; but the eyes are rounder, and both eyes and scrobes appear much nearer to the upper line of the outline. The antennæ are a little longer and less stout than those of *P. umbratus*, joints 3 to 7 of the funiculus being not quite so wide as long, and the club being considerably longer and less thickened. The inner outline of the front tibiæ is spinulose rather than denticulate.

Two examples taken at no great distance from Adelaide, although smaller than the type (long., $1\frac{3}{4}$ l.), appear to me to belong to this species. They are, however, devoid of the indumentum that is usually present, their surface being clothed with

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scales of various brown tints, shaded off into each other. The prothorax is covered with rather coarse flattened tubercles, closely placed, and the elytra are clothed with short curved setæ.

S. Australia; Basin of Lake Eyre.

LONGICORNES.

TRYPHOCHARIA.

T. Mitchelli, Hope. My note on this sp. (vide supra, p. 56) has elicited from Mr. French, the Victorian Colonial Entomologist, information that satisfies me of my supposed identification of this insect having been founded on a mistake, and that the specimen I regarded as *T. Mitchelli* is in reality an example of an undescribed species—which accordingly I describe as follows:—

T. Frenchi, sp. nov. Valde elongata; fusco-ferruginea, capite prothorace et elytrorum basi piceis, his in parte apicali tertia fuscis in parte intermedia sordide testacea (parte intermedia irregulariter fascia transversa angusta anfracta fusca notata); prothorace quam longiori paullo latiori, fortiter ruguloso, tuberculis 4 et spatio mediano sub-lanceolato instructo, lateribus spina modica acuta vix arcuta armatis, elytris crasse punctulatis (antice profunde, retrorsum gradatim minus profunde), ad apicem oblique truncatis et spinis binis acutis validis armatis; antennarum articulo 3° quam 4^{us} parum (quam 5^{us} haud) longiori, articulis 3° 4° que spina externa armatis. Long., 20 l.; lat., 5 l.

The type is a female, its antennæ not quite reaching the apex of the elytra.

N.S. Wales.

DIDYMOCANTHA.

D. novica, sp. nov. Nitida; minus sparsim pilosa; nigro fusca; scutello griseo-pubescenti; antennarum articulis 3° 5° que (apice excepto) 6^{i} que basi, femoribus ad basin, tibiis in medio, elytrorum humeris summis, prosterno metasterno et abdominis basi, testaceis; prothorace quam longiori vix latiori, sat crasse umbilicato-punctulato, 11-tuberculato; elytris sat fortiter (apicem versus magis subtiliter) sat crebre punctulatis, obsolete bicostatis, apicibus rotundatis; femoribus quam *D. obliquæ*, Newm. paullo brevioribus paullo minus linearibus; antennis (feminæ?) quam corpus paullo brevioribus, articulo 3° quam 4^{us} sat longiori quam 5^{us} vix breviori. Long., 7 l.; lat., 2 l.

This species appears to be very near *D. brevicollis*, Pasc. (from W. Australia), which I know only by description, but it is cer-

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tainly, I think, distinct. It seems to be very differently colour the W. Australian insect having testaceous elytra with shoulders and apices darker, whereas in this the elytra brownish-black, with the shoulders testaceous. In *D. brevica* the tubercles on the prothorax are said to be nine (three on disc and three on each side); in this species there are a transve row of five tubercles a little in front of the base (the external on each side being spiniform), a transverse row of four slightl front of the middle, and a single tubercle on each side just ab the middle. The basal four joints of the antennæ are nitid very coarsely punctulate; the entirely dark colour of the fou joint is probably not constant. The absence of a depres pubescence, the colour, and many other characters, distinguish from *D. obliqua*. The femora, without being at all clavate, stouter than, and not quite so linear, as those of *D. obliqua*.

Victoria; Mooroolbark Ranges; taken by Mr. French.

D. (Stenocorus) annulicornis, Germ. This species seems be identical with *D. obliqua*, Newm., of which, in that c its name will be a synonym.

TEISPES.

T. Frenchi, sp. nov. Mas. Nitidus; piceo-niger; metaste pedibusque rufis, hoc breviter fulvo-pubescenti, anter rufo-piceis; mandibulis quam caput parum brevioribus, s sim inæqualiter punctulatis; capite medio subtiliter ca iculato, antice inæqualiter punctulato (puncturis magnitud valde diversis), postice opaco granulato; prothorace qu longiori plus quam duplo latiori, antice fortiter trisinu disco toto (puncturis magnis sparsis in parte postero-exte exceptis) fere lævi, parte laterali sat late opaca crebre ru lose punctulata, lateribus serratis; elytris obsolete reticul rugatis vix perspicue punctulatis ad apicem rotundato-tr catis (angulo suturali breviter spiniformi), vix perspi 3-costatis, sulco elongato obsoleto prope marginem latera instructis; femoribus posterioribus 4 subtus biseria denticulatis; tibiis anticis prope apicem dente singulo et apicem altero extus armatis; antennis quam corporis di dum paullo longioribus, scapo oculum medium paullo su anti parum depresso, articulo 3° quam scapus pa breviori; abdomine fere lævi, segmento apicali postice lo fulvo-ciliato.

Feminæ mandibulis paullo brevioribus, prothorace angusti Long. (mands. incl.), 18—21 l.; lat., 6—6½ l.

The prothorax of the male is scarcely, of the female consi ably, narrower than the elytra. I have in my collection example from Port Darwin of an insect which I take to be

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dorsalis, Thoms. (and which, moreover, is very likely to be *Mallodon insulare*, Hope—Hope's name in that case having the priority). Compared with the Port Darwin species the present insect is much more nitid, the basal joint of the antennæ scarcely flattened, the lateral borders of the prothorax very much more strongly and closely punctured, in sharp contrast with the almost perfectly lævigate disc, the elytra nearly lævigate, the abdomen nearly black, &c.

N. Queensland; presented to me by C. French, Esq.

MICROTRAGUS.

M. quadrimaculatus, sp. nov. Setis erectis sparsim vestitus; dense nigro-fusco squamosus, palpis testaceis, pedibus et maculis in elytris binis (humerali et subapicali) cinereo-squamosis; prothorace quam latiori (spinis lateralibus exclusis) vix longiori, supra subplanato, inæquali, ruguloso, utrinque spina robusta conica armato; elytris quam prothorax (spinis lateralibus inclusis) vix latioribus, tuberculorum conicorum seriebus binis instructis, ad apicem singulatim minute oblique truncatis. Long., $4\frac{1}{2}$—6 l.; lat., $1\frac{4}{5}$—$2\frac{2}{5}$ l.

The disc of the prothorax bears numerous obscure little tubercles, and a larger one on each side of the median line nearer to the front margin than to the base; some of the small tubercles form an obscure raised line across the disc somewhat behind the middle. The elytra are sparsely pitted with large fovea-like punctures. The nearly-black colour with a large ashy-white spot on each shoulder, and another near the apex of each elytron (the latter ill-defined,—the whole apex being slightly cinereous) renders this a very distinct species.

N. Queensland; sent to me by C. French, Esq.

PENTHEA.

P. pardalis, Newm. I have recently seen in the collection of C. French, Esq., a specimen taken in N.W. Australia which appears to be a small and rather obscurely-coloured example of this insect. I believe its occurrence in Western Australia has not been previously recorded.

PHYTOPHAGA.

DONACIA.

D. Australasiæ, sp. nov. Testacea, prothorace obscuriori, hoc elytrisque viridimicantibus; corpore subtus confertim breviter albido-argenteo-pubescenti; antennis gracilibus quam corpus paullo brevioribus; femoribus haud dentatis;

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elytris punctulato-striatis, ad apicem truncatis. Long., 4 l.; lat., $1\frac{1}{6}$ l.

This species appears to be a true *Donacia*, the insertion of the antennæ, the almost contiguous strongly exserted front coxæ, the form of the prothorax, and I think all other structural characters being quite as in that genus. It is an insect of a pale, washed-out, testaceous-brown colour, with a bright greenish gloss in certain lights. The head and prothorax are almost devoid of puncturation, and are semi-opaque, owing to being minutely coriaceous. The prothorax is a little rugulose near the base, all its angles well defined and laterally prominent. The antennæ and legs are of a brighter testaceous colour than the general surface, each joint of the former a little darker at the apex.

Queensland; sent to me by G. Masters, Esq.

RHYPARIDA.

R. Mastersi, sp. nov. Flavo-fulva, mandibulis antennis (articulis basalibus 4 exceptis) genubus et elytrorum fasciis latis 2 (altera basali altera apicali) nigris, his in margine laterali anguste connexis, tibiis tarsis mesosterno metasternoque obscurioribus; clypeo profunde emarginato (angulis anticis productis) fortiter sat crebre punctulato; fronte impunctata puncturis paucis antice positis exceptis) in medio antice longitudinaliter breviter foveolata; prothorace lævi, lateribus rotundatis; elytris seriatim sat fortiter punctulatis puncturis apicem versus subobsoletis; femoribus muticis. Long., $2\frac{4}{5}$ l.; lat., $1\frac{1}{4}$ l.

This species does not approach any yet described in colouring —and it is certainly not a variety of any of a fairly long series of species in my collection. Nevertheless the species of this genus are so subject to variation in markings that it is not improbable a good many now called species may eventually be found to be varieties. I cannot, however, suggest any species of which this may be a variety, and in any case it is convenient that well-marked varieties should have a distinctive name. In the present insect the dark fasciæ are so wide as to occupy the greater part of the elytra, the fulvous colouring appearing as a fascia, occupying about the middle one-third of the elytra, its front margin commencing on each elytron a little behind the scutellum on the suture and running obliquely hindward to the lateral margin (which it does not quite touch) at about a third of its length; the *hind* margin of the fulvous part of the elytra commencing on the suture a little behind its middle and running obliquely towards (but not quite touching) the lateral margin at about two thirds of its length from the base.

Queensland; sent to me by Mr. Masters.

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STETHOMELA.

S. caudata, sp. nov. Late ovalis, valde convexa; nitida; nigro-viridis capite prothorace antennarum basi elytrorum apice summo abdomineque (segmento basali excepto) rufis; capite fortiter sat crebre (vertice lævigato excepto), prothorace acervatim sat fortiter, punctulatis; elytris seriatim punctulatis (puncturis retrorsum gradatim magis subtilibus), pone humeros profunde impressis; prosterno medio triangulariter planato, parte planata carina subtili marginata; unguiculis appendiculatis. Long., 3 l.; lat., 2 l.

An extremely distinct species. The structure of the prosternum bears a remarkable resemblance to that of some species of *Rhizobius*.

Queensland; sent to me by Mr. Masters.

PAROPSIS.

P. rufopicta, sp. nov. Breviter ovata; minus convexa; sat nitida; nigra, antennis palpis tarsisque rufescentibus, prothorace ante medium maculis 2 approximatis elytris maculis 3 (basali prope scutellum oblongo, mediana transversa oblique posita, subapicali irregulari) rufis ornatis; supra tripliciter punctulata (puncturis subtilibus et aliis sat fortibus intermixtis undique, puncturis magis crassis latera versus, positis), puncturis magnitudine intermedia in elytris irregulariter undatim seriatis; prothorace quam longiori plus quam duplo (postice quam antice paullo plus quam tertia parte) latiori, antice fortiter bisinuatim emarginato, lateribus leviter arcuatis, angulis anticis productis minus acutis posticis rotundatis; sternis fere lævigatis; abdomine sparsim fortiter punctulato. Long., $2\frac{1}{4}$ l.; lat., 2 l. (vix).

The seriate puncturation of the elytra is much confused, but seems to consist of about ten fairly continuous lines, and about as many more mixed among them, which are wavy and scarcely continuously traceable. This sculpture would place the present species in Dr. Chapuis' "Group IV." of the genus. The coarsest of the punctures are scattered about the front and sides of the head (which is very wide), and form a confused stripe along either side of the prothorax and elytra. The elytra at the base are considerably wider than the base of the prothorax; their shoulders are much rounded.

W. Australia; sent to me by G. Masters, Esq.

AULACOPHORA.

A. occipitalis, Baly. I have an example taken near Port Darwin, which is quite identical with specimens of this species from New Guinea.

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RUPILIA.

R. rugulosa, sp. nov. Ovata; subopaca, subtus magis nitida; nigro-piceo, capite antice prothorace sternis et segmento ventrali apicali rufescentibus; supra sat equaliter rugulose punctulatus; prothorace quam longiori fere duplo (postice quam antice haud multo) latiori, latitudine majori ante medium posita, lateribus subangulatim rotundatis, marginibus anticis et posticis late leviter concavo, utrinque basin versus sulco obliquo impresso. Long., 4 l.; lat., 2½ l.

N. Queensland; sent to me by Mr. Masters.

COCCINELLIDÆ.

EGLEIS.

E. varicolor. Muls. From the description of *Coccinella Kingi*, Macl., it has appeared to me that *E. varicolor* is identical with it, and Mr. Masters has now done me the favour of comparing an example with the original type of Macleay's insect, with the result of proving my conjecture right. *E. varicolor*, therefore, becomes a synonym of *C. Kingi*.

NEDA.

N. bicolor, sp. nov. Late ovata; valde convexa; nitida; supra modice vix crebre punctulata; capite antennis palpis corpore subtus pedibusque rufo-testaceis, prothorace (hujus angulis anticis anguste flavis) nigris. Long., 2½ l.; lat., 2 ⅛ l.

This species is a *Neda* in Mulsant's sense of the term. I am unable to discriminate the briefly-characterised sections into which Mr. Crotch divided it, but as I can find no structural character to separate it from *N. princeps*, Muls., I presume that author would have placed it in *Archaioneda*. Apart from its entirely different colouring it is very like *N. princeps* in miniature, having an exactly similar outline (which is very peculiar) when viewed from the side. The prothorax, however, is much more strongly transverse than that of *N. princeps*, and is somewhat wider in proportion to the elytra. Superficially not unlike *Synia melanaria*, Muls., but differs in the form of the clypeus and other structural characters. The flanks of the prosternum are not foveated.

N. Queensland; sent to me by Mr. Masters.

CŒLOPHORA.

C. Mastersi, sp. nov. Late ovalis; subcircularis; distincte sat crebre punctulata; nigra, capite antennis palpis prothoracis lateribus (late) margine antico et linea mediana angusta prosterno epipleuris (his externe nigris) pedibus et abdominis

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lateribus rufo-testaceis, elytris ad apicem anguste rufescentibus. Long., $2\frac{1}{5}$ l.; lat., 1 $\frac{4}{5}$ l.

This species also bears a superficial resemblance to *Synia melanaria*, but has the clypeus of a *Cœlophora*. It is not unlike *C. Jansoni*, Crotch, but is smaller, with the prothorax and underside marked with black, and the tips of the elytra only very narrowly reddened; its puncturation, moreover, is considerably less strong. It is also near *C. vidua*, Muls., from Java, but is a little smaller, with the median line of the prothorax red, the elytra tipped with red, the abdomen (except at the sides) black, &c.

N. Queensland; sent to me by Mr. Masters.

C. guttata, spec nov. Subcircularis; sat convexa; sat crebre minus subtiliter punctulata; nigra, prothorace (parte mediana tertia excepta) pallide flavo, capite antennis palpis et pedibus anterioribus 4 rufo-testaceis, elytris maculis binis magnis sanguineis (altera antemediana transversa, altera subapicali ovali paullo minori) ornatis. Long., $1\frac{7}{10}$ l.; lat., $1\frac{3}{5}$ l.

A very distinct species. I do not think any very near it has been described.

N. Queensland; sent by Mr. Masters.

CHILOCORUS.

C. flavidus, sp. nov. Hemisphæricus; minus sabtiliter sat crebre punctulatus, puncturis magnis seriebus binis in elytris latera versus irregulariter positis; callo humerali valde prominenti; flavus, elytris macula communi elongato-triangulari in sutura alteraque transversa postmediana nigris, his maculis in sutura confluentibus. Long., $2\frac{1}{5}$ l.; lat., 2 l.

The puncturation is very similar to that of *C. renipustulatus*, Scriba. The sides of the prothorax are not pubescent. The black markings on the elytra consist of an elongate triangle, with its base occupying about the middle quarter of the base of the elytra, and its apex on the suture considerably behind the middle, and a post median fascia touching the margin on both sides, and of very irregular shape, with its hindmargin produced on the suture nearly to the apex. The two black marks meet on the suture. The spine on the tibiæ is very strongly developed.

N. Queensland; sent by Mr. Masters.

ORCUS.

This genus might easily be subdivided on structural characters of considerable importance. The species differ in the form of the clypeus to an extent that seems inconsistent with the importance attributed to that character in founding the sub-family *Chilocorites* upon it. In *O. bilunulatus*, Boisd., the clypeus is

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extremely strongly dilated laterally, forming a wide lamina in front of the eyes, and entirely concealing the base of the antennæ, which lamina becomes successively feebler in *Australasiæ cyanocephalus cœlestis*, until in *chalybeus* it is reduced to a mere fine carina. Mulsant has already called attention to the presence in some species, and absence in others, of a fovea on the sides of the prosternum. The elytral epipleuræ also vary, being fovealated more or less strongly in *bilunulatus Australasiæ* and *cyanocephalus*, but not (or at least not distinctly) in the others known to me of the genus. I may say that I have not seen *O. quadrimaculatus*, De Kerville. The following species appear to be new.

O. punctulatus, sp. nov. Hemisphæricus; minus convexus; crebre sat subtiliter punctulatus; supra cyaneus, prothorace antice et ad latera ante medium anguste rufomarginato, antennis labro palpis pedibus et corpore subtus (prosterno epipleurisque nigris exceptis) testaceis; prothorace ad latera quam in disco magis fortiter punctulato sed nullo modo ruguloso; elytris ad latera sat late sat æqualiter deplanatis; clypeo ad latera sat fortiter (fere ut *O. cyanocephali*, Muls.) laminato; prosterni lateribus et epipleuris foveolatis. Long., $2\frac{1}{2}$ l.; lat., $2\frac{1}{2}$ l.

Colored almost as *O. cyanocephalus*. It is allied to that species, but is larger, more evenly rounded on the sides (not at all ovate) and not so strongly convex; the puncturation is finer and much closer throughout, the prothorax is not rugulose at the sides, and the explanate border of the prothorax is considerably wider; the basal line of the prothorax is (as in that species) distinctly separate from the hindmargin. I have no doubt of my identification of *cyanocephalus*, as my type is from Port Darwin (near the original locality), and agrees well with the description.

N. Queensland; sent by Mr. Masters.

O. splendens, sp. nov. Subhemisphæricus; minus convexus; sat crebre minus subtiliter punctulatus: supra læte purpureus, subtus cum antennis palpis pedibus epipleurisque testaceus; prothorace ad latera quam in disco magis fortiter punctulato sed nullo modo ruguloso; elytris ad latera anguste deplanatis; clypeo ad latera fortiter laminato: nec prosterni lateribus nec epipleuris foveolatis. Long., $1\frac{1}{2}$ l.; lat., $1\frac{3}{10}$ l.

Easily distinguishable by its small size and bright purple colour, the underside being entirely testaceous, as well as by the strong lateral dilatation of the clypeus in conjunction with the absence of foveæ on the sides of the prosternum and on the epipleuræ. The basal line of the prothorax is scarcely separated from the hindmargin.

N. Queensland; sent by Mr. Masters.

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O. ovalis, sp. nov. Late ovalis; sat convexus; subtiliter sat crebre punctulatus; supra splendide viridis, subtus cum pedibus (tarsis abdomineque rufescentibus exceptis) niger, antennis palpisque rufis; prothorace sat æqualiter punctulato; elytris ad latera anguste deplanatis; clypeo ad latera fortiter laminato; nec prosterni lateribus nec epipleuris foveolatis. Long., 1 $\frac{4}{5}$ l; lat., 2$\frac{2}{5}$ l.

Var. supra cyaneus.

A very distinct species, well characterised by its brilliant metallic upper surface and black under surface (except the reddish abdomen) and legs (except the tarsi), It is a little more elongate than its congeners, and is also remarkable for the sides of its prothorax being punctured very little more strongly than the disc. The basal line of the prothorax is distinct from, but very near to, the hind margin.

N. Queensland; sent by Mr. Masters.

O. Australasiæ, Boisd., var.? *obscurus*. Differt statura multo minore, colore nigro (maculis minoribus obscure ferrugineis). Long., 1$\frac{1}{2}$ l.; lat., 1$\frac{2}{5}$ l. (vix).

I have seen several examples of this insect, all from Yilgarn, W. Australia, and all quite identical—and can hardly persuade myself that they are a mere variety, although I cannot find any difference from the type except in respect of size, colour, and markings. The spots on the elytra are placed as in *Australasiæ*, but are quite small, and of a very dark ferruginous tint, so as to be very inconspicuous.

W. Australia; sent by C. French, Esq.

GYMNOSCYMNUS, gen. nov. *Coccinellidarum*.

Corpus fere glabrum, prothorace setis brevibus minus conspicuis sat sparsim vestito; oculi minus subtiliter granulati ferè paralleli; clypeus antice truncatus; antennæ ad basin apertæ, quam *Scymni* paulo longiores, *11-articulatæ; prosternum breve in medio sat æqualiter convexum; lamellæ abdominales segmenti basalis apicem attingentes, hujus cum margine postice confusæ; elytrorum epipleuræ subhorizontales integræ, haud foveolatæ; unguiculi appendiculati; sutura ventrali inter segmenta basale et secundum sat fortiter impressa.

The minute species for which I propose this new generic name is scarcely pubescent; the elytra appear to be absolutely glabrous,

* I have not been able to break off an antenna for microscopic examination, as I possess only a single example, but I feel satisfied that there are 11 joints in the antennæ; I can count 10 very distinctly, and am nearly certain there is another that would be distinct under a microscope.

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but the head and prothorax are set somewhat sparsely with crisp silvery hairs; its epipleuræ entire and horizontal furn very distinctive character, they are almost exactly like tho *Epilachna*. This genus is not very near to any other knov me; in Dr. Chapuis' arrangement of the *Coccinellidæ* its is in the group *Scymnites*. In my tabulation of the Aust *Coccinellidæ* (Tr. Roy. Soc., S.A., XI., pp. 186-7) it falls l the species that I have called "Eupalea?" from which it by its incomplete abdominal lamellæ.

G. quadrimaculatus, sp. nov. Fere circularis; nitidus; elytris maculis binis magnis rufis ornatis, nonnul exemplorum (? marium) capite prothoracis lateribus fe busque anticis plus minusve testaceis; supra crebrius tiliter (latera versus magis fortiter) punctulatus; proth fortiter transverso, hujus basi quam elytrorum basi angustiori; corpore subtus sublævi. Long., $\frac{4}{5}$ l.; lat (vix).

SCYMNOMORPHA, gen. nov.

Corpus pubescens; oculi subtiliter granulati sat paralleli; cl antice truncatus; antennæ ad basin apertæ breve articulatæ; prosternum sat elongatum, antice transv æqualiter sat fortiter convexum haud carinatum; sout modicum; lamellæ abdominales integræ, antice extus intra marginem lateralem terminatæ, postice segmenti b ventralis apicem nullo modo attingentes; elytrorum leuræ horizontales longe ante apicem terminatæ, haud latæ; femora haud in sulcos recepta; unguiculi appe lati.

This genus is certainly near *Scymnus* (Mulsant's sub *Pullus*), but the prosternum wide in front, and evenly c without any depression or carinæ, seems to justify its separ The first ventral suture is well defined, and scarcely less str impressed than the others. The facies is that of an elo *Scymnus*.

S. duplopunctulata, sp. nov. Sat elongato-ovalis; a pubescens; convexa; nigra, corpore subtus rufes antennis pedibusque rufis; capite prothoraceque subtilissime elytris dupliciter (crebre subtiliter et fo sparsim) punctulatis. Long., $1\frac{3}{5}$ l.; lat., 1 l.

Victoria; Alpine District.

SCYMNODES.

S. Koebeli, Blackb. Among the *Coccinellidæ* recently se me by Mr. Koebele are a number of examples of *Scym* which I think must be referred to this species, although in

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case they prove it to be one of the most variable of its family. Among them there are hardly two to be found strictly identical in colouring or sculpture. The greater part of them appear from the labels to have been taken at one place (Toowoomba) and on one plant *(Eugenia)*. As most of them would be quite unrecognisable by comparison with my description of the type form, I think it will be best to describe them as being probably varieties of *S. Koebeli*, as follows :—

Var. ? *immaculatus* a, *S. Koebeli*, differt elytris immaculatis.

Var. ? *Eugeniæ* a, *S. immaculato*, differt pedibus (tarsis exceptis) totis capiteque nigris.

Var. ? *fulvohirtus* a *S. immaculato*, differt pedibus totis capiteque nigris, corpore supra fulvo- (nec cinereo-) hirsuto.

var. ? *varipes* a *S. immaculato*, differt tibiis (præsertim anticis) plus minusve rufescentibus, elytris obsolete punctulatis magis nitidis (nonnullorum exemplorum corpore supra fulvo-hirsuto).

An example differing from the typical form only in the somewhat stronger sculpture of its elytra and under surface and its more darkly coloured head and legs I take to be a typical female. A remarkable character in *S. Koebeli* is the exceptionally strong dilatation of the elytra immediately behind the base, which causes the lateral margin to be very strongly sinuate about the middle.

SCYMNUS.

S. Sydneyensis, sp. nov. Ovalis ; pubescens ; sat convexus ; sat nitidus ; coriaceus, vix distincte punctulatus ; niger, capite prothoraceque (? maris solum) rufescentibus vel testaceis, hoc in medio (præsertim postice) infuscato, elytris maculis rufis ornatis (sc. macula basali magna juxta scutellum, macula parva pone humerum, et fascia pone medium nec marginem lateralem nec suturam attingenti), abdomine postice (? maris solum) rufescenti, pedibus rufescentibus vel testaceis ; prosterno medio longitudinaliter depresso, spatio depresso lato sat parallelo utrinque leviter longitudinaliter carinato ; lamellis abdominalibus haud integris. Long., 1 l. ; lat., $\frac{3}{5}$ l.

N.S. Wales ; taken by Mr. Koebele near Sydney.

S. Australasiæ, sp. nov. Breviter ovalis ; pubescens ; minus convexus ; modice nitidus ; coriaceus, vix distincte punctulatus ; rufo-testaceus, capite prothoracis parte media et elytrorum maculis nonnullis (sc. macula communi triangulari basali et binis minoribus discoidalibus posterioribus) piceis ; prosterno medio longitudinaliter depresso, spatio depresso lato sat parallelo utrinque leviter longitudinaliter

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carinato; lamellis abdominalibus haud integris. Long., $\frac{9}{10}$ l.; lat., $\frac{7}{10}$ l.

Among the *Coccinellidæ* taken by Mr. Koebele are specimens from various localities in Queensland, N.S. Wales, and Victoria which agree in presenting the structural characters of the example here described, and are all distinguished by their very fine (scarcely distinct) puncturation, and by being of a rufo-testaceous colour with a more or less distinct infuscate triangular spot, with its base on the base of the elytra, and its apex on the suture at about one-third of the length of the same from the scutellum. In some of these the head is infuscated, and in some the middle part of the prothorax is more or less stained with black; some have also two small infuscate spots placed longitudinally on the hinder part of the disc of each elytron. I think, though not without hesitation, that they all belong to one variable species. I have, however, selected a well-marked example from Queensland for description, and consider it possible that some of the specimens I treat as varieties may yet prove to be distinct species. The insect is very near *S. insidiosus*, Blackb., from S.W. Australia, but is certainly, I think, distinct by its more needle-point puncturation, which is less closely placed on the elytra.

Queensland, &c.

S. jocosus, sp. nov. Ovalis; pubescens; modice convexus; minus nitidus; coriaceus, vix distincte punctulatus; niger vel piceo-niger, corpore subtus plus minusve rufescenti, antennis palpis tibiis anticis tarsis omnibus et elytris postice rufo-testaceis, his maculis binis magnis transversis (altera antemediana lata altera postmediana sat angusta) læte flavis ornatis; posterno medio longitudinaliter depresso, spatio depresso minus angusto antrorsum a basi leviter angustato utrinque leviter carinato; lamellis abdominalibus haud integris; prothoracis basi media sublobata, lobo postice truncato. Long., 1 l.; lat., $\frac{4}{5}$ l. (vix).

Easily recognisable by the markings on the elytra, which seem constant. They consist of two large bright-yellow transverse spots on each elytron, which nearly (but not quite) touch both suture and lateral margin. The front one extends from a little behind the base to about one-third the length of the elytron, and is produced forward in the middle of its front margin. The hind one is not much more than half as wide as the other, and is situated a little in front of the apex; it is of flexuous form.

Queensland; taken by Mr. Koebele near Toowoomba on *Eugenia*.

S. cucullifer, sp. nov. Ovalis; pubescens; modice convexus;

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minus nitidus ; coriaceus, vix distincte punctulatus ; pallide testaceus, metasterno abdomineque rufescentibus, elytris nigris utrinque macula magna arcuata longitudinaliter posita pallide testacea ornatis, elytrorum colore nigro in prothorace producto cucullum simulanti (nonnullis exemplis maculis in elytris divisis vel minoribus vel carentibus, nonnullis exemplis corpore subtus infuscato) ; prosterno medio longitudinaliter depresso, spatio depresso lato sat parallelo utrinque leviter longitudinaliter carinato ; lamellis abdominalibus haud integris. Long., 1 l.; lat., $\frac{7}{10}$ l.

In the example described there is a somewhat kidney-shaped whitish-testaceous mark on each elytron, its convex side directed outward, its lobes nearly reaching the suture, its front a little in front of the middle of the length of the elytra, its hind extremity not very far from the apex of the elytra ; in another example only the two lobes of this mark are present, as two isolated spots on each elytron, in another it is altogether wanting, and the elytra are uniformly black ; all the examples have the prothorax of a very pale testaceous colour, with a large black mark projecting forward over more than half the length and width, like a hood thrown forward from the black elytra over the prothorax ; in one of them, however, the black colouring becomes a little pitchy or brownish in the front of the elytra and on the prothorax.

N. S. Wales (Richmond River) and Queensland; taken by Mr. Koebele.

S. victoriensis, sp. nov. Sat elongato-ovalis ; albido-pubescens ; sat convexus ; niger, capite prothorace (macula magna basali mediana nigra excepta) elytrorum (nonnullis exemplis) apice summo prosterni lateribus abdominis lateribus et apice antennis palpis pedibusque rufis ; capite prothoraceque crebre subtiliter, elytris minus subtiliter vix crebre, punctulatis ; prosterno medio longitudinaliter minus depresso, spatio mediano minus lato sat parallelo haud ad marginem anticum continuato utrinque subtiliter longitudinaliter carinato ; lamellis abdominalibus haud integris. Long., 1½ l.; lat., 1 l.

The elongate form of this species associates it with *S. aurugineus*, Blackb., to which, however, it bears no other resemblance.

Victoria ; Alpine district.

S. subelongatulus, sp. nov. Sat elongato-ovalis; albido-pubescens ; convexus ; niger, prothoracis margine antico summo elytrorum apice, abdomine antennis tibiis tarsisque rufis ; capite prothoraceque subtilissime vix manifeste, elytris paullo magis fortiter nec crebre punctulatis ; prosterno medio

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longitudinaliter depresso, spatio depresso lato sat pa
haud ad marginem anticum continuato, utrinque
tudinaliter carinato ; lamellis abdominalibus haud in
Long., $1\frac{2}{5}$ l.; lat., $\frac{4}{5}$ l.

Much like the preceding in size and shape, but very diffe
coloured and punctured.

Victoria ; Alpine district.

S. sublatus, sp. nov. Late ovalis ; albido-pubescens ; sa
vexus ; rufo-testaceus, elytris piceis ; capite prothora
vix manifeste elytris subtiliter crebre punctulatis ; pro
medio longitudinaliter depresso, spatio depresso sat la
parallelo haud ad marginem anticum continuato ut
subtiliter carinato ; lamellis abdominalibus haud in
Long., $\frac{4}{5}$ l.; lat., $\frac{7}{10}$ l. (vix).

Very distinct from its previously described congeners
short broad form (suggestive of *Ditropidus*) and its colouri

N.S. Wales ; Blue Mountains.

S. pretiosus, sp. nov. Sat late ovalis ; albido-pubescens ; sa
vexus ; colore variegatus, capite prothorace (hoc post
medio infuscato) et pedibus (femorum posteriorum tibi
que apice et tarsis, infuscatis) flavis, elytris metaster
nigris, abdomine rufescenti ; capite prothoraceque
subtiliter, elytris sat sparsim sat fortiter, punctulatis
sterno medio longitudinaliter minus depresso, spatio m
sat lato sat parellelo utrinque subtiliter longitudi
carinato ; lamellis abdominalibus haud integris. Long.,
lat., $\frac{1}{2}$ l.

A very pretty species ; bears a certain resemblance to th
ceding, but differs in its dark metasternum and hind body
in the colour of some other parts, as well as in the much
strong and sparse puncturation of its elytra.

Victoria ; Alpine district.

S. aspersus, Blackb. The examination of more examp
S. insidiosus, Blackb., suggests the possibility that *S. as*
may be an extreme variety of it. I have not, however, see
specimen of *insidiosus* that is not of distinctly shorter and
form than *S. aspersus*.

S. inaffectatus, sp. nov. Sat late ovalis ; albido-pubescens
emplo typico fere abraso) ; sat convexus : capite prot
(hoc macula magna basali fere semi-circulari nigra o
pedibusque rufo-testaceis, elytris rufis (horum sutura
corpore subtus (prosterno elytrorumque epipleuris p
exceptis) fere nigro ; capite prothoraceque subtili
elytris magis fortiter, punctulatis ; prosterno medio

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tudinaliter depresso, spatio depresso minus lato sat parallelo utrinque longitudinaliter carinato, lamellis abdominalibus haud integris. Long., 1 l.; $\frac{7}{10}$ l.

This species, in its colour and markings, is more or less like *S. insidiosus* and *Australasiæ*, but at once distinguished from them by the considerably stronger puncturation of its elytra, which associates it with *S. Whittonensis*, a very differently coloured species, with bright fulvous (instead of ashy-white) pubescence.

Victoria; Alpine district.

S. Whittonensis, sp. nov. Breviter ovalis; læte aureo-vel fulvo-pubescens; modice convexus; minus nitidus; crebre sat distincte punctulatus; piceo-niger, capite prothoracis margine antico lateribusque prosterni lateribus pedibus anticis femoribus intermediis et tarsis omnibus rufo-testaceis; prosterno medio longitudinaliter depresso, spatio depresso lato sat parallelo utrinque leviter longitudinaliter carinato; lamellis abdominalibus haud integris. Long., 1 l.; lat., $\frac{9}{10}$l.

This species resembles *S. tenebricosus*, Bohem., in puncturation, but is very differently coloured, its pubescence particularly being of a bright fulvous colour. The limit of the dark part of the prothorax consists of a curved line commencing on the lateral margins a little in front of the base, and nearly touching the anterior margin at its middle.

N.S. Wales; taken by Mr. Koebele near Whitton.

S. (?an gen. nov.) *queenslandicus*, sp. nov. Oblongus; albido-pubescens; minus convexus; minus nitidus; obcure brunneus, antennis pedibusque dilutioribus, epipleuris testaceis; capite prothoraceque crebre subtiliter, elytris et corpore subtus fortiter minus crebre, punctulatis; prosterno medio longitudinaliter depresso, spatio depresso minus lato sat parallelo utrinque leviter longitudinaliter carinato; lamellis abdominalibus haud integris; suturis ventralibus æqualiter sat profunde impressis. Long., $\frac{4}{5}$ l.; lat., $\frac{1}{2}$ l. (vix).

This minute insect is probably not a true *Scymnus*; the only definite character, however that I can find to distinguish it consists in the first ventral suture not being enfeebled in the middle; the comparatively narrow elongate flattish form gives it a facies unlike *Scymnus*. Nevertheless, as I have not an example for dissection, and so cannot satisfactorily investigate its characters, it is better to place it provisionally in *Scymnus*, from which I do not think it could be far removed structurally.

An example occurs among Mr. Koebele's *Scymnidæ* which is a little less elongate, less parallel, and more convex (being, therefore, more *Scymnus*-like in form); it possibly represents a closely allied distinct species; the flattened space on its prosternum (as

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might be expected from the general form) seems distinctly wider than in the specimen described, but as I can find no other difference I think the variation of form is probably sexual.

Queensland; taken by Mr. Koebele.

S. vagans, sp. nov. Late ovalis; pubescens; modice convexus; minus nitidus; niger, vel nigro-piceus, antennis palpis pedibusque læte testaceis; prothorace subtiliter sat crebre, elytris sat fortiter minus crebre, punctulatis; prosterno medio angusto planato; lamellis abdominalibus integris. long., $\frac{1}{2}$ l.; lat., $\frac{1}{3}$ l.

This minute species seems to be a typical *Scymnus* in all respects except in having its abdominal lamellæ entire (I have not, however, succeeded in counting the joints in its antennæ). It is at once distinguished from its Australian described congeners by its extremely small size.

Victoria and N.S. Wales; taken by Mr. Koebele.

The following tabulation of the hitherto described Australian *Scymni* will probably aid in the identification of the foregoing new species.

A. Abdominal lamellæ incomplete.
 B. First ventral suture enfeebled in the middle.
  C. Pubescence short and fairly close.
   D. Prosternum not simple.
    E. Puncturation of elytra more or less fine and close (not less so, *e.g.*, than in *S. discoideus*, Ill.).
     F. Prosternal ridge entire.
      G. Form more or less widely oval.
       H. Puncturation of elytra excessively fine (scarcely visible), especially near suture.
        I. Elytra blackish, without sharply defined pale markings (prothorax without sharply defined markings).
         J. Suture finely carinate behind middle ... simplex, Blackb.
         JJ. Suture not at all carinate behind middle ... lubricus, Blackb.
        II. Elytra not as I (or prothorax with sharply defined markings).
         J. Base of prothorax not with an emarginate lobe.
          K. Elytra blackish, at least on a large space around the scutellum.

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L. Pucturation of elytra sparse and scarcely visible ... ... Australasiæ, Blackb.

LL. Puncturation of elytra less fine and sparse

M. Form very short and wide ... ... insidiosus, Blackb.

MM. Form less short and wide.

N. Elytra with large conspicuous yellow markings ... jocosus, Blackb.

NN. Elytra not bearing large conspicuous yellow markings ... ... aspersus, Blackb.

KK. Elyt. (except suture and some small markings) pale testaceous brown ... ... australis, Blackb.

JJ. Base of proth. with an emarginate lobe.

K. Markings of elytra yellow ... ... cucullifer, Blackb.

KK. Markings of elytra red ... ... sydneyensis, Blackb.

HH. Puncturation of elytra much better defined (not much less strong than in *S. capitatus*, Fab.).

I. Elytra evenly punctured, or nearly so.

J. Large species (exceeding 1 l. in length) with the elytra red, at least in hinder part.

K. Prothorax almost lævigate ... ... poonindiensis, Blackb.

KK. Prothorax punctured almost uniformly with the elytra ... Meyricki, Blackb.

JJ. Small species (at most 1 l. in length).

K. Pubescence silvery whitish.

L. Head front of pro-

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thorax and front legs in male pale yellow — flavifrons, Blackb.
LL. Not colored as L ... — tenebricosus, Boh.
KK. Pubescence fulvous
L. Hind legs black ... — Whittonensis, Bl.
LL. All the legs rufo-testaceous ... — inaffectatus, Blackb.
II. Elytra almost lævigate towards the lateral margins ... ... — casuarinæ, Blackb.
GG. Form very elongate ... — aurugineus, Blackb.
FF. Prosternal ridge not extending to front margin of prosternum.
G. Elytra not marked with a sharply defined sanguineous pattern.
H. Head and prothorax not entirely bright rufous.
I. Head black.
J. Size large, sides nearly parallel ... ... — subelongatulus, B.
JJ. Size small, sides arcuate — oscillans, Blackb.
II. Head red ... ... — victoriensis, Blackb.
HH. Head and prothorax entirely bright rufous — sublatus, Blackb.
GG. Elytra marked with a sharply defined sanguineous pattern ... — Sedani, Blackb.
EE. Puncturation of elytra much more strong and sparse ... — pretiosus, Blackb.
DD. Prosternum quite simple ... — inusitatus, Blackb.
CC. Pubescence long and sparse ... — notescens, Blackb.
BB. First ventral suture normal ... — queenslandicus, B.
AA. Abdominal lamellæ complete.
B. Elytra with defined markings ... — parallelus, Blackb.
BB. Elytra devoid of markings ... — vagans, Blackb.

HYPOCYREMA, gen. nov. *(Coccinellidarum).*

Corpus pubescens; oculi subtiliter granulati; clypeus anti truncato-emarginatus subreflexus ad latera late dil antennarum basi omnino obtegens; prosternum latu æqualiter convexum; scutellum parvum; lamellæ abd ales magnæ integræ, segmenti basalis apicem attingc elytrorum epipleuræ sat latæ, ad femora recipienda fove femora in sulcos recepta; suturæ ventrales bene impr tibiis in femorum sulcos receptæ.

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ecies on which I found this genus has much general
ce to *Cyrema nigellum*, Blackb., but its clypeus being
idely (quite as much so as in any *Orcus* or *Chilocorus*)
des in front of the eyes seems to forbid placing it in
It may be distinguished from *Serangium* (which has a
similar clypeal structure) by its finely-granulated eyes
Lipernes by the under-surface of its body being deeply
r the reception of the legs.

llum, sp. nov. Subhemisphæricum; nitidum; breviter
lo-pubescens; nigrum; prothorace inmedio obsolete, ad
a crebre rugulose punctulato; elytris subtiliter leviter
crebre punctulatis; segmentis ventralibus basali et
li crebre rugulose, ceteris vix perspicue, punctulatis.
g., $\frac{4}{5}$ l.; lat., $\frac{3}{5}$ l.
lia; taken by Mr. Koebele; exact locality not specified.

CYCLOSCYMNUS, gen. nov. *(Coccinellidarum).*

ninus pubescens, capite prothoraceque setis brevibus
s conspicuis sat sparsim vestitis; oculi sat subtiliter
ulati fere paralleli; clypeus antice truncatus; antennæ
asin apertæ, breves, 11-articulatæ; prosternum sat breve,
edio vix planato sed spatio lato mediano carina subtili
que marginato; scutellum perparvum; lamellæ abdo-
les segmenti basalis apicem attingentes, hujus cum
gine postice confusæ; elytrorum epipleuræ sat horizon-
haud integræ, ad femora recipienda foveolatæ; femora
lcos recepta; suturæ ventrales bene impressæ; unguiculi
ndiculati.

ecies for which it is necessary to form this genus is very
n general appearance to *Gymnoscymnus*, *Bucolellus*, and
n, but a glance at the structural characters will show
nnot be placed in any of them. In Dr. Chapuis' arrange-
the *Coccinellidæ* its place is in the *Bucolites*. In my
n of the Australian *Coccinellidæ* (Trans. Roy. Soc., XI.,
) it falls into the Division "AA" along with *Serangium*
ma, from both which the following characters in com-
will distinguish it:—Prosternum not abnormally pro-
front, nor having the median space abruptly flat.

us, sp. nov. Fere circularis; nitidus; sat convexus;
s, elytris brunnescentibus, maculis ternis testaceis
tis (his longitudinaliter in serie positis); in capite pro-
aceque sparsim manifeste (in elytris vix manifeste) setis
bus vestitus; supra sparsim minus fortiter (latera versus
s fortiter) punctulatus; prothorace fortiter transverso,
s basi quam elytrorum basis vix angustiori; corpore

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subtus sparsim minus subtiliter punctulato; segment
trali apicali (♂ maris) crebre fortiter punctulato. Lon
lat, $\frac{3}{5}$ l. (vix).

This species is very easily recognisable by its marking
sisting of a longitudinal series of three pale testaceous sp
each elytron.

N.S. Wales; Blue Mountains; taken by Mr. Koebele.

BUCOLINUS, gen. nov. *(Coccinellidarum).*

Corpus pubescens; oculi minus subtiliter granulati sat pa
clypeus antice truncatus; antennæ ad basin apertæ el
robustæ 11-articulatæ; prosternum sat breve, antice
versim leviter convexum vix depressum nec carin
scutellum modicum; lamellæ abdominales integræ f
transversæ postice segmenti basalis ventralis apice
attingentes; elytrorum epipleuræ leviter concavæ long
elytrorum medium continuatæ, contra pedes interme
posticos foveolatæ; corpus subtus ad femorum recep
leviter excavatum; unguiculi appendiculati.

The species for which I propose this name has very mu
appearance of *Bucolus*, but though it is certainly near that
structurally, it cannot be placed in it. According to Dr. C
the essential character of the *Bucolites* is a combination
following,—antennæ exposed at the base, epipleuræ fove
body pubescent. The present genus presents this combi
and agrees with *Bucolus* in the following characters (by
Dr. Chapuis separates *Bucolus* from the other genera
group)—claws appendiculate, abdomen consisting of five seg
no fossa under the anterior angles of the prothorax. It
from *Bucolus*, however, in the absence of a chin-piece
tonnière) in its comparatively long, stout antennæ, whi
almost like those of a *Rhizobius*, in its clypeus not being
expanded laterally, in its simple tibiæ, and in the differen
of its elytral epipleuræ, which are not nearly so wide in f
those of *Bucolus*, and are generally narrowed hindward t
the apex (the evenness of their narrowing being not mu
turbed opposite the hind coxæ, whereas in *Bucolus* the epi
are very wide in front, but suddenly become almost ver
apparently non-existent, opposite the hind coxæ). The e
in *Bucolus)* are evidently less finely granulated than in *Sc*
but very much less coarsely than in *Rhizobius*. The abd
lamellæ are very much like those of *Bucolus*, but do not c
nearly reach the hind margin of the basal ventral segment

B. longicornis, sp. nov. Late ovalis, fere subcircularis;
depressus; albido-pubescens; piceo-rufus capite prot

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bus antennis pedibusque dilutioribus, metasterno et
enti basalis parte mediana nigris; capite prothoraceque
liter, elytris paullo magis fortiter, crebre punctulatis.
., $1\frac{1}{2}$ l.; lat., $1\frac{1}{10}$ l.
a; Alpine District.

Rhizobius.

r, Black. This species is very closely allied to *D. Bou-*
tch; but I believe it to be a distinct species. I do not
difference in the sexual characters. I have before me
e of *R. Boucardi* (female) which differs from *R. major*
e sex as follows:—The general form is much more
red instead of being clear bright fulvous, the general
uch more convex, and not so wide, the elytra are more
evidently less closely punctured, and the elevated
ace of the prosternum is differently shaped, being
mediately behind its front margin, and then distinctly
again hindward, while the same piece in *R. major* is
narrowed from the coxæ to the front margin.

otatus, sp. nov. Ovalis, paullo elongatus; convexus;
e fulvo-pubescens et setis erectis sparsim vestitus; rufis,
s insigniter nigro-pictis; prothorace quam longiori vix
(postice quam antice haud multo) latiori, lateribus
otundatis, angulis anticis rotundatis posticis distinctis
is; capite prothoraceque vix perspicue elytris sparsim
citer (subtiliter et sat crasse) punctulatis; prosterno
longitudinaliter anguste depresso, spatio depresso fere
lelo utrinque carinato antice obtuso. Long., 2 l.; lat.

istinct by the sharply defined and conspicuous black
on the elytra, which consist of a number of longitu-
s forming (in the example before me) a strong vitta on
the scutellum reaching nearly the middle of the ely-
lated at its base, and several other vittæ which are
nd run into each other here and there in such fashion
an irregular and very strongly zigzagged fascia near the
ouching the lateral margin, and on each elytron a discal
of a fascia reaching neither the suture nor the lateral
nd connected at its external side with the hinder

ales; taken by Mr. Koebele.

ennis, sp. nov. Sat late ovalis; sat convexus; pallide
-pubescens et setis erectis sparsim vestitus; niger,
e prothoracis lateribus elytrorum partibus nonnullis [sc.
ine laterali suturaque (his anguste), macula magna

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humerali (hac postice bifida), macula elongata comi suturali mediana, et macula sat parva postmediana p suturam] prosterno antennis palpis pedibus et abdor lateribus apiceque rufo-testaceis; prothorace quam lon circiter duplo (postice quam antice haud multo) la lateribus modice rotundatis, angulis anticis rotundatis ticis distinctis obtusis; capite prothoraceque subtiliss elytris sat crebre minus subtiliter, punctulatis; prost medio longitudinaliter anguste depresso, spatio dep elongato-triangulari antice sat acuto. Long., 2 l.; lat., 1

Distinguished from all the previously-described Austr *Rhizobii*, with a similar prosternal structure (ex *R. nigronotatus)* by its elytra having well-defined mark From *R. nigronotatus* it differs *inter alia* by the puncturatio its elytra.

Queensland; taken by Mr. Koebele near Toowoomba *Eugenia*.

R. speculifer, sp. nov. Ovalis; sat convexus, elytris minus l pone scutellum fere subgibbosis; pallide fulvo-pubescer setis erectis sparsim vestitus; rufus, prothorace plus min infuscato, elytris æneo-piceis; prothorace quam longiori duplo (postice quam antice circiter tertia parte) la lateribus subrectis, angulis anticis rotundatis, posticis rectis; capite prothoraceque sat crebre vix fortiter, el sat fortiter vix crebre (quam *R. lituri*, Fab., paullo m fortiter minus crebre, in spatio communi paullo scutellum obsolete) punctulatis; prosterno medio longitu aliter depresso, spatio depresso triangulari utrinque cari antice obtuso. Long., $1\frac{3}{5}$ l.; lat., $1\frac{1}{10}$ l.

Easily distinguished by the almost lævigate common spac the elytra, a little behind the scutellum.

Queensland; taken by Mr. Koebele on *Eugenia*.

R. Toowoombæ, sp, nov. Ovalis; sat convexus; pallide f pubescens et setis erectis sparsim vestitus; rufo-testa elytris æneis, prothorace nonnullis exemplis plus min infuscato; prothorace quam longiori duplo (postice q antice haud multo) latiori, lateribus vix arcuatis, an anticis rotundatis, posticis fere rectis; corpore supra tiliter minus crebre punctulato; prosterno medio longitu aliter depresso, spatio depresso elongato-triangulari utri carinato antice obtuso. Long., $1\frac{3}{10}$ l.; lat., 1 l.

The elytral puncturation of this species is even finer than of *R. debilis*, Blackb., from which it also differs (apart from different colouring) in the sides of its flattened prosternal r

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ng from base to front. The described species resembling
r are all strongly punctured.
sland (Toowoomba).

s, sp. nov. Ovalis; sat convexus; pallide argenteo-
(nullo modo fulvo) pubescens et setis nigris erectis
sim vestitus; supra nigricans, corpore subtus piceo,
nnis metasterni lateribus abdomine coxis genubus
sque rufescentibus; prothorace quam longiori duplo
ice quam antice haud multo) latiori, subtilius punctulato,
ibus leviter arcuatis, angulis anticis rotundatis, posticis
rectis; elytris sat fortiter minus crebre punctulatis;
terno medio longitudinaliter depresso, spatio depresso
gulari utrinque carinato antice subacuto. Long., $1\frac{1}{10}$ l.;
$\frac{4}{5}$ l. (vix).

allied to *R. Lindi*, Blackb., but at once distinguishable
ort pubescence of the upper surface being silvery white
ll fulvous), and the long setæ black. From *R. hirtellus*,
it differs *inter alia* by its smaller size and different
.

sland; taken by Mr. Koebele.

ntii, sp. nov, Ovalis, elytris inpartibus duabus pos-
ribus æqualiter arcuatim angustatis; subdepressus;
reo-fulvo-pubescens et setis pallidis erectis minus per-
is vestitus; piceo-niger, capite prothorace antice et
tera elytrorum margine laterali summo antennis pedibus
mineque rufis; prothorace quam longiori circiter dimidio
ri, antice modice angustato, lateribus sat arcuatis,
lis anticis rotundatis, posticis sat rectis; prothorace sat
ter, elytris æqualiter valde fortiter, sat crebre (fere ut
ituri, Fab., sed multo magis æqualiter) punctulatis; pro-
no medio longitudinaliter depresso, spatio depresso sub-
gulari utrinque carinato antice vix acuto. Long., $1\frac{2}{5}$ l.;
$\frac{4}{5}$ l.

ecies has little of the facies of a *Rhizobius*, owing to its
form and the shape of its elytra, which widen gently
base hindward for only about one-third of their length,
narrow gently, continuously, and arcuately to the apex.
rom the side the insect appears only about half as *high*
f its congeners (*e.g.*, *discolor*, Er.); in its depressed form
us, Blackb., approaches it. In colouring and punctura-
proaches *R. discolor*, Er., but with the punctures on the
idently more even (*i.e.*, of more equal size and more
istributed).
Vales; Blue Mountains; also taken by Mr. Koebele in
nd.

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R. fasciculatus, sp. nov. Late ovalis; nitidus; sat conve
niger, abdomine vix rufescenti, elytris violaceis, c
antice antennis palpis geniculis anticis tarsisque rufo-t
ceis; setis elongatis erectis nigris et fasciculis n
brevioribus intermixtis vestitus; capite prothoraceque n
sparsim elytris sparsissime inæqualiter, perspicue pu
latis; prothorace quam longiori circiter duplo (pc
quam antice haud multo) latiori; prosterno medio pla
spatio planato lato postice sat parellelo antice acumi
Long., $1\frac{1}{5}$ l.; lat., $\frac{4}{5}$ l.

A very distinct species on account of the rich violet colo
its elytra, and the fascicles of snowy-white hairs with which
are spotted. The head of the type is so drawn back into
prothorax that I cannot examine the eyes very satisfactorily
I can see that they are more or less coarsely granulated, an
all the other characters agree well with *Rhizobius*, I have no
tation in referring the present insect to that genus.

Queensland; taken by Mr. Koebele, near Toowoomba
Eugenia.

R. apicalis, sp. nov. Ovalis; sat convexus; nitidus; arge
pubescens et setis erectis pallidis sparsim vestitus; p
niger, labro palpis antennis femoribus anticis tibiis tars
omnibus et abdomine plus minusve testaceo-rufis, elytr
parte apicali (hac bene determinata) sanguinea; proth
circiter duplo (postice quam antice haud multo) la
antice utrinque oblique late obscure impresso, minus pers
punctulato, lateribus fere rectis, angulis anticis rotun
posticis sat rectis; elytris sparsim sat fortiter punctul
prosterno medio longitudinaliter depresso, spatio depress
angulari. Long., $1\frac{1}{5}$ l.; lat., $\frac{4}{5}$ l.

The sharply defined bright-red apical part of the ely
readily distinguishes this species from all its near allie
described.

N.S. Wales; taken by Mr. Koebele in the Richmond l
District.

R cœrulens, sp. nov. Ovalis; sat convexus; nitidus; rufo-pi
antennis palpis prothoracis lateribus et margine antico
tarsisque dilutioribus, prothoracis disco elytrisque ob
cœruleis,; fulvo-pubescens et setis fulvis sparsim vest
prothorace quam longiori fere duplo (postice quam a
haud multo) latiori distincte sat crebre punctulato, late
leviter arcuatis, angulis anticis rotundatis posticis fere r
elytris crebre minus fortiter punctulatis; prosterno n
longitudinaliter depresso, spatio depresso lato para
Long., $1\frac{1}{5}$ l.; lat., $\frac{4}{5}$ l.

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ue colour of the elytra, together with the very distinct
tion of the elytra and the unusual width of the longi-
lepressed space on the prosternum, readily distinguish
ies.
lia; taken by Mr. Koebele; the exact locality not

salis, Blackb. (Tr. Roy. Soc., S.A., 1892, p. 70). For
ncturation is strong on the elytra, but) considerably
on the prothorax" read ". . . . considerably less
e prothorax."
us, sp. nov. Elongato-ovalis; sat convexus; setis fulvis
brevibus erectis minus sparsim vestitus; rufo-piceus,
nnis pedibus et epipleuris dilutioribus; capite protho-
que vix manifeste, elytris sat crebre sat fortiter punctu-
; prothorace quam longiori fere duplo (postice quam
ce haud multo) latiori, lateribus vix arcuatis, angulis
cis rotundatis haud productis posticis rectis; corpore
us sat crebre minus subtiliter punctulato; prosterno
io æqualiter convexo nec planato nec carinato. Long.,
lat., $\frac{3}{5}$ l.
distinguished from the other described species having
ernum similarly formed by its obscure dark-red colour
paratively coarsely punctured elytra.
Vales and Queensland; taken by Mr. Koebele.
I furnished the Royal Society (in 1888) with a tabular
t of the distinctive characters of the Australian species
bius, so many additional species have been described in
group of the genus (which I called "A") that a new
n seems to be called for, as follows—[In the case of
si, Muls., and *R. discolor*, Er., and also of *R. hirtellus*,
nd *R. ruficollis*, Blackb., I am unable (for want in each
reliable type of one of the species) to set down a clearly
le record of a distinctive character; but in each case I
hat the species bracketed together are distinct *inter se.*]

RHIZOBIUS.

an space of prosternum longi-
dinally flattened, and with a fine
rina on either side.
es distinguished by two large
veæ on the apical ventral seg-
ent.
rm oval.
uture of the general colour.
Lateral margins of general colour,
apex of elytra sanguineous.

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F. Form convex, puncturation sparse and fine ... ... Boucardi, Cro
FF. Form depressed, puncturation stronger and closer ... major, Blackb
EE. Lateral margin narrowly sanguineous ... ... Bakewelli, Cr
DD. Suture narrowly sanguineous ... carnifex, Mul
DDD. Suture with a large sanguineous spot ... ... bajulus, Muls
CC. Form narrow and elongate ... proprius, Blac
BB. Sexual characters not as in B.
C. Elytra uniformly piceous reddish or black, or with these colours indefinedly mingled (as from immaturity) and furnished with long erect hairs.
D. Colour of ventral segments uniform (or nearly so) with the undersurface.
E. Species of normally convex form.
F. Elytra more or less evenly punctured.
G. Prothorax conspicuously and closely punctured.
H. Prothorax (or at least its disc) coloured as the elytra.
I. Legs (especially the femora) more or less infuscate.
J. Size moderate or small (long. 1½ l. or less).
K. Elytra uniformly shining piceous, slightly metallic-bronzy (less closely punctured) ... ... Lindi, Blackb
KK. Elytra not at all metallic, usually in part rufescent (more closely punctured) ... dorsalis, Blac
JJ. Size large (long. 2 l. or nearly so) ... ... fugax, Blackb
II. Legs entirely bright rufous or testaceous ... ... discolor, Er. / Evansi, Muls.
HH. Prothorax entirely bright rufous, in strong contrast to the elytra ... ... hirtellus, Cro / ruficollis, Bla

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G. Prothorax scarcely distinctly punctulate.	
I. Prothorax and elytra concolorous or nearly so.	
I. Flattened ridge of prosternum elongate-triangular ...	cæcus, Blackb.
II. Flattened ridge of prosternum with parallel sides	debilis, Blackb.
HH. Prothorax red, in conspicuous contrast to the elytra	Toowoombæ, Blackb.
. Elytra with a conspicuous common lævigate space a little behind the scutellum	speculifer, Blackb.
Form much more depressed than is usual in *Rhizobius* ...	Aurantii, Blackb.
Ventral segments rufo-testaceous, in strong contrast to the black sterna.	
Puncturation of elytra close (as much so as in *R. discolor*, Er.)	ventralis, Er.
Puncturation of elytra much less close	satelles, Blackb.
Elytra not as in the preceding group ("C")	
Elytra spotted with fascicles of white hair	fasciculatus, Blackb.
Elytra with a sharply-defined coloured pattern.	
Elytra finely punctulate ...	ornatipennis, Blackb.
. Elytra coarsely punctulate ...	nigronotatus, Blackb.
D. Elytra blue or metallic.	
Elytra pale reddish, with greenish opalescence	insipidus, Blackb.
. Elytra dark blue (general form very elongate)	cyaneus, Blackb.
EE. Elytra bright metallic blue (general form oval) ...	cœruleus, Blackb.
DD. Elytra piceous, with ill-defined reddish blotches	læticulus, Blackb.
DDD. Elytra piceous, with the apex brightly sanguineous	apicalis, Blackb.

ERITHIONYX (gen. nov.).

io affinis differt oculis minus fortiter granulatis unguiculque anterioribus 4 bifidis posticis appendiculatis.

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Typ. *E. (Rhizobius) lanosus*, Blackb.

When I described *R. lanosus* (supra, p. 71) I noted the neces
cf regarding it as forming a distinct sub-section of *Rhizob*
In studying the further supply of material sent by Mr. Koeb
I find that the difference in the pubescence which gives it a fac
different from that of typical *Rhizobii* is accompanied b
very considerably finer granulation of the eyes, and the
peculiar character of the claws of the anterior four legs be
strongly bifid while those of the hind legs are appendiculate.
must therefore form a new genus.

MIDUS.

According to Mr. Crotch, in his "Revision of the *Coccinellid*
Scymnus stragulatus, Er. (from Tasmania), belongs to this ge
which M. Mulsant founded (on an African species) as a subge
of *Pharus*. Mr. Crotch states that it is a good genus on acc
of its elongate subdepressed form, complete abdominal pla
coarsely granulated eyes, and long antennæ. In his subsequ
remarks Mr. Crotch seems to imply that he has not seen Er
son's species; but also states some of its characters wit
preciseness that appears inconsistent with his not having seen
making no remark on its antennæ beyond what is implie
associating it with the African species

Among the *Coccinellidæ* taken by Mr. Koebele in N.S. W
and Queensland are three examples of an insect which, I th
is almost certainly congeneric with *S. stragulatus*, Er., and n
be exceedingly close to it as a species. It is certainly n
Midus, as Mr. Crotch defines the genus; but it agrees very
with Mulsant's diagnosis of the same, which assigns to it
finely granulated. It differs also from the characters Mr. Cr
assigns to *S. stragulatus* in its elytral epipleuræ not being
tinctly foveolate (although there is an exceedingly obsolete dep
sion opposite the hind femora).

Unfortunately I have not an example of the African speci
Midus for comparison, but I think it extremely improb
that this insect is really congeneric with them; as, howeve
seems to agree (in respect of the characters its author assign
the genus) with *Midus* of Mulsant, although differing from
flatly contradictory characters assigned by Mr. Crotch I t
it will be best to regard this insect for the present as a *M*
It may be noted that it bears a great resemblance superfic
(especially in respect of its colour and markings) to *Scym*
parallelus, Blackb., but differs from that species in impor
structural characters, especially in the form of its abdom
lamellæ (which are transverse, their outline meeting the f
margin of the segment externally quite close to the exte

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of the segment), in its first ventral suture not being en-
in the middle, and in the elytral epipleuræ being
d back (gradually narrowing) very much nearer to the

æus, sp. nov. Ovalis, paullo elongatus ; sat convexus ;
sim fulvo-pubescens ; supra piceo-niger, prothoracis
ribus et in elytris vittis dorsalibus singulis (his ante
em introrsum flexis et suturam attingentibus) rufescenti-
corpore subtus rufescenti, antennis pedibusque testaceo-
; capite prothoraceque sparsim subtilius punctulatis ;
quam longiori fere duplo (postice quam antice haud
to) latiori, a basi antrorsum angustato, lateribus vix
atis, angulis anticis leviter productis subacutis posticis
sis ; elytris confuse dupliciter (subtiliter et magis
iter) minus crebre punctulatis ; segmento ventrali basali
nedio sparsim subtiliter, ceteris magis fortiter sat crebre,
ctulatis. Long., 1 l. ; lat., $\frac{3}{5}$ l.

allied to *M. stragulatus*, Er., but very much smaller,
the lateral portions of the elytra entirely blackish, the
ot black, the head less finely punctulate, &c.
Wales and Queensland ; taken by Mr. Koebele.

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MISCELLANEA.

List of Plants collected by Dr. Stirling in Central A between Frew Ponds (lat. 17°) and Mount Stuart (l on the Transcontinental Telegraph Route. By Pr Ralph Tate.

Capparideæ—*Cleome viscosa*, Mount Stuart.
Violaceæ—*Hybanthus enneaspermus*, Mount Stuart.
Sapindaceæ—*Dodonæa lanceolata*.
Malvaceæ—*Abutilon Fraseri*, between Mounts Stua Boothby.
Chenopodiaceæ—*Salsola Kali*, Mount Stuart.
Phytolaccaceæ—*Codonocarpos cotinifolius*, Mount Stuart.
Leguminosæ—*Gastrolobium grandifolium*, *Acacia re* Attack Creek. *Erythina vespertilio*.
Proteaceæ—*Grevillia agrifolia*, Attack Creek. *Hakea carpa*.
Combretaceæ—*Macropteranthes Kekwickii*, Frew Ponds.
Myrtaceæ—*Calycothrix microphylla*, Frew Ponds. *M Leucodendron*, a shrub with red flowers in a clos Attack Creek.
Compositæ—*Minuria leptophylla*, *Helichrysum apic* Mount Stuart.
Asclepiadeæ—*Cynanchum floribundum*, Mount Stuart.
Solanaceæ—*Solanum Sturtianum*, *S. ellipticum*, between Stuart and Boothby.
Verbenaceæ—*Spartothamnus teucriifolius*, between Stuart and Boothby.
Bignoniaceæ—*Dolichandrone heterophylla*, Frew Ponds.
Myoporineæ—*Eremophila Latrobei*, Mount Stuart.

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BIBLIOGRAPHICAL NOTICES.

SOUTH AUSTRALIAN SUN-DEW.—MR. J. G. O. TEPPER in sches Centralblatt," Cassel, 1892, describes as a new *Drosera praefolia*, collected by him at Clarendon. It s *D. Whittakerii*, but blossoms before the leaves appear d of the autumn.

SOUTH AUSTRALIAN FUNGI—DR F. LUDWIG in "Zeit- ür Pflanzenkrankheiten," describes as a new *Puccinia* a rust-affecting *Arundo Phragmites* at the Grange, near . On other specimens of the same grass *P. Magnusiana*, e, has been detected. A second new species is *Puccinia ccinia) munita*, which is parasitic on *Hydrocotyle hirta* ng the Mount Lofty Range. The specimens which served determinations were collected by Mr. Tepper and com- ed by him to Dr. Ludwig.

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ABSTRACT OF PROCEEDINGS

OF THE

Royal Society of South Austral

FOR 1891-92.

ORDINARY MEETING, NOVEMBER 3, 1891.

Prof. TATE, F.L.S. (Vice-President), in the chair.

EXHIBITS.—Prof. TATE, F.L.S., &c., showed some mamm remains from the caves of Curramulka, Y.P. J. G. O. TE F.L.S., exhibited a new coccid, which had been named b Maskell, *Frenchia Casuarinæ*. S. CLARK showed the red scarlet varieties of *Ptistes erythropterus*. A. ZIETZ (Assi Director of the Museum) exhibited a stuffed specimen *Dendrolagus*, from New Guinea, which differed in some p from other described species.

PAPERS.—"Cambrian Rocks at Curramulka," by G PRITCHARD. "New Species of *Fabularia*," by M. SCHLUMBE "New Species of *Palparia*," by OSWALD LOWER. "Introd Plants in the Northern Territory," by MAURICE HOLTZE.

ORDINARY MEETING, MARCH 1, 1892.

Rev. THOS. BLACKBURN, B.A. (President), in the chair.

MOTION.—It was moved and carried that the Royal Socie Victoria be empowered to officially speak for this Society in representation that might be made to the Victorian Governm remonstrating against the proposed curtailment of assistanc BARON F. VON MUELLER, K.C.M.G., on the ground that it w lessen the scientific and economic value of his work.

PAPERS.—"Remarks on the Volcanic Formation of the So East," by WALTER HOWCHIN, F.G.S. "Notes on the Ho Meeting of the Australian Association for the Advancemen Science," by W. B. POOLE. "Descriptions of New South tralian *Geometrina*," by OSWALD LOWER.

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ORDINARY MEETING, APRIL 5, 1892.

ATE, F.L.S. (Vice-President), in the chair.

S.—A. ZIETZ (Assistant Director of the Museum) from Myponga, a piece of micaceous sandstone in form re- Maori flax-beater. It was considered to have been formed causes. J. G. O. TEPPER, F.L.S., showed a collection of m Yilgarn, W.A., collected by Miss Rogers; also, a gregarious caterpillar spinning a common nest. They o be nocturnal in their habits. The nests infested the *icina*, growing between Moonta and Wallaroo, and were by Mr. Styles in October. The following December s were spun in the nest, and in February the *imago* nd at once laid eggs, which were covered with the the moth. Prof. TATE, F.L.S., laid on the table of Tasmanian gems; a tooth of *Zeuglodon* from the Tasmania, and a similitude of a shoe-last in ironstone.

—"List of S. A. Kangaroos and Wallabies," by "Description of a New Species of *Stibaroma*," by OWER. "On the 'Dodging Tide' at Port Adelaide," CHAPMAN, M.A., and Capt. INGLIS.

ORDINARY MEETING, MAY 3, 1892.

HOS. BLACKBURN, B.A. (President), in the chair.

S.—Prof. TATE, F.G.S., exhibited the fossil cast of a ooth of *Carcharodon megalodon* found in the Eocene amilton, Victoria. It measured five inches in length nches in breadth. Applying to this tooth the data by Dr. Bowerbank in 1852 from an investigation of of a specimen of *Carcharias glaucus* caught in waters during the voyage of H.M.S. "Beagle," namely, mes the length gave the vertical gape of jaw $8\frac{1}{5}$ times, ntal gape, and $169\frac{1}{7}$ times the length of the animal. of the tooth exhibited must have had a vertical gape 51 ins.; a horizontal gape of 41 ins.; and have 0 ft. 6 ins. in length. A. ZIETZ (Assistant Director seum) showed stuffed specimens of *Chœropus*, or the bandicoot, and compared them with specimens of *lagotis* and *Perameles obesula*, the common bandicoot. EPPER, F.L.S., laid on the table a specimen of *Drosera*

—"The *Phaneropteridæ* of Australia and Polynesia," . TEPPER, F.L.S. "On the Origin of Spherical Con- ns found in Central Australia," by Prof. TATE. ons of New Coleoptora," by Rev. THOS. BLACKBURN,

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B.A. "The Energy of the Electro-magnetic Field," by
BRAGG, M.A.

ORDINARY MEETING, JUNE 7, 1892.

REV. THOS. BLACKBURN, B.A. (President), in the chair

EXHIBITS.—OSWALD LOWER laid on the table a case
"Morpho" genus of butterflies. J. G. O. TEPPER, F
exhibited moths bred from the galls of *Acacia pycnantha*, gr
at Norwood. Upon these were two parasitic hymenopter
two moths, identified by Mr. Oswald Lower as *Euzophera*
cuella (Meyr.) and *Crocidosema plebiana*; also, a specim
Casuarina quadrivalvis infected with galls of an uncor
kind; also, a plant of *Drosera præfolia*, which had deve
leaves since last meeting. A. ZIETZ (Assistant Director
Museum), showed specimens of *Ephthianura albifrons*, *E.*
frons, and *E. tricolor*, with their eggs and nests; also, *Cinc*
castanotium, with its eggs and nests, the latter being ne
science. These were collected during the Elder Exp
Expedition. Also, *Oreoica* sp. (?), supposed to be new to sc
collected by Mr. R. Helms, naturalist to the above expedi
also, a species of *Xerophila*, collected near Mount Birrell d
the trans-continental trip of His Excellency the Governor,
Kintore.

PAPERS.—"Narrative of an Exploring Tour across M
Island," by MAURICE HOLTZE (Director of the Botanic Gar
"Descriptions of New Lepidoptera," by OSWALD L
A. ZIETZ (Assistant Director of the Museum) referred to a
by Mr. D. S. Jordan "On the Effect of Temperature
Development of Vertebræ amongst Fishes."

ORDINARY MEETING, JULY 5, 1892.

Rev. THOS. BLACKBURN, B.A. (President), in the chair

EXHIBITS.—Prof. TATE, F.G.S., exhibited a series of b
from Croydon Bore No. 2, received from the Conservat
Water. The last material was from a depth of 980 feet
consisted of calcareous sands, with a few echinoids a
Terebratulina Davidsoni, and was probably of Eocene
A. ZIETZ (Assistant Director of the Museum), showed
species of coots and water-hens, to be seen at present o
Torrens Lake, at Adelaide, namely, *Porphyrio melanotus*, *Tri*
ventralis, *Fulica australis*, *and Gallinula tenebrosa*.

PAPERS.—"Notes on some Habits of the Chingalee Tribe,
by A. G. B. RAVENSCROFT.

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ORDINARY MEETING, AUGUST 2, 1892.

THOS. BLACKBURN, B.A. (President), in the chair.

ITS.—OSWALD LOWER laid on the table a case of the *alaina*, a group of beautiful Australian moths. A. ZIETZ t Director of the Museum) exhibited the following birds th America, namely, *Rupicola peruviana*, *Casmorhynchus atus*, or bell-bird, *Calurus resplendens*; and from *Calymene viridis* and *Pitta granatina*. J. G. O. F.L.S., showed a collection of *Gryllacridæ* and *Stenopel-* T. W. BEDNALL forwarded the land and fresh-water llected by the Elder Exploring Expedition.

T.—J. H. MAIDEN (Curator Technological Museum, and LOUIS SCHULZ, Missionary, near Charlotte Waters, ted Corresponding Members.

S.—The following papers on the Elder Exploring on collections:—"Lepidoptera," by OSWALD LOWER; nd Fresh-water Shells," by T. W. BEDNALL; "Manna, nd Resins," by J. H. MAIDEN; "New Species of Plants," N F. VON MUELLER and Prof. RALPH TATE, F.G.S.

ORDINARY MEETING, SEPTEMBER 6, 1892.

THOS. BLACKBURN, B.A. (President), in the chair.

resident welcomed Mr. Robert Etheridge (Palæontologist ydney Museum), and Hon. Fellow of the Society, to the

ITS.—Prof. TATE, F.G.S., exhibited Cambrian fossils South Australia. A. ZIETZ (Assistant Director of the), showed native implements from the Solomon Islands, th mother-of-pearl. D. J. ADCOCK laid before the meet- mens of *Voluta Adcocki*, which had been figured and d by Prof. Tate, F.G.S., under that name, in 1888. He d that a very similar shell from Western Australia had cribed (but not figured), by E. A. Smith, in 1886, under e of *V. Guentheri*. Mr. Smith, on comparing the two, ed them con-specific.

S.—"Glacial Phenomena in the Mount Gambier Dis- P. H. PRIESTLEY. "The *Gryllacridæ* and *Stenopelmatidæ* ralia and Polynesia," by J. G. O. TEPPER, F.L.S. ment of Recent Bivalves," by Prof. TATE, F.G.S. sis of New Mollusca," by Prof. TATE, F.G.S. "Des- of New Plants," by Prof. TATE, F.G.S. "Cambrian f South Australia," by Prof. TATE, F.G.S. "Notes on currence of *Hyalostelia*," by W. HOWCHIN, F.G.S. orts of Elder Exploring Expedition," by F. STEPHANI, of

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Annual Meeting, October 4, 1892.

Rev. Thos. Blackburn, B.A. (President), in the chair.

Auditor.—D. J. Adcock was elected to audit the accoun the past year.

Reports.—The Annual Report of the Council and the Bala sheet were read and adopted. The Annual Reports and Bala sheets of the Field Naturalist and Microscopical Sections accepted.

Election of Council.—The Council for the ensuing year elected as follows:—President, Prof. Tate, F.G.S.; Vice-Presid Rev. Thos. Blackburn, B.A., and Maurice Holtze, F.L.S.; Treasurer, Walter Rutt, C. E.; Hon. Secretary, W. L. Cle M.B.,; Members of Council, Prof. Rennie, D.Sc., E. C. Stir M.D., Walter Howchin, F.G.S., Samuel Dixon, J. S. Lloyd, W. B. Poole.

Vote of Thanks.—A vote of thanks was carried to Cleland for his services as Hon. Secretary during the past ye

Retiring President.—The President, before vacating chair, made a few remarks on the desirability of incr activity amongst scientific workers, to secure data before natural conditions of the Province had been altered by the gress of civilisation and the occupation of the land.

Geological Congress.—The attention of the Fellows Members of the Society was drawn to the notice that the Session of the Congrès Géologique International, would be at Berne, Switzerland, November, 1894.

Motion.—A requisition, signed by five Fellows of the So gave notice of a motion to alter Rules 36, 37, 48 and 49, a November meeting. The one object was to have two Secretaries, so that one might act as a Librarian, the oth enable an Auditor being elected at any meeting prior t Annual Meeting.

Papers.—"Descriptions of New Coleoptera," by Rev. Blackburn, B.A. "The Coleoptera of the Elder Expl Expedition," by Rev. Thos. Blackburn, B.A. "Critica marks on A. Bittner's 'Echinoiden des Tertiaires von Austral by Prof. Tate, F.G.S. "Effects of Grazing on the Indig Vegetation," by S. Dixon.

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ANNUAL REPORT.

ıncil has to report that the scientific work of the Society carried on satisfactorily during the past year. Part I. rent year's transactions was published in July, and it is d that Part II., completing Vol. XV., will be ready for on in December. Vol. XVI. is reserved for the c Results of the Elder Exploring Expedition," and will ıultaneously with the above.

the past year two Corresponding Members have been amely, J. H. Maiden, of the Technological Museum of and the Rev. Louis Schulz, a missionary, living at ourg, near Charlotte Waters, Central Australia. Both members have contributed valuable papers to the

llowing Fellows have resigned:—A. W. Fletcher, H. . Gardner, A. L. Harrold, and J. W. Tyas.

lowing Fellow has had his name removed by the Council payment of arrears of subscriptions, namely, Jas. H

uncil has the melancholy duty of reporting the death of Fellow, Sir William Macleay; and of a Corresponding J. Canham.

ınks of scientific workers, and our list of Honorary have suffered a loss by the death of SIR WILLIAM , and though the deceased gentleman did not contribute ansactions, yet, in other ways, he was directly of great the Society. Efforts are now being made to raise a sum £400, to be applied to the publication of a Macleay Volume; and, in a circular issued by the promoters, made to your liberality on the following grounds:—

V. Macleay was not only a liberal patron of science, but also an ole worker in several of its branches.

pent large sums of money in forming an extensive collection of natural history and of ethnological interest, and, in order to t, he, in the year 1875, purchased and fitted out the ship ," and at his sole expense conducted an expedition to the then n island of New Guinea, the result being that his museum was riched; the entire collection, valued at £23,000, he afterwards to the University of Sydney, together with the sum of £6,000 to Senate to provide a salary for a curator.

he year 1874 Sir William established the Linnean Society of New les for the cultivation and study of natural history in all its on lines carefully thought out by himself; and as a proof that

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the want of such an organisation was much felt, I may point out
the leading scientific men of the colony at once enrolled thems
members, that there has since been a constant accession of new me
fill the vacancies created by death or otherwise, and that the Societ
co-operating cordially with most of the leading societies of t
character throughout the civilised world, has greatly enhanced the
repute of New South Wales.

(4) In order to ensure the permanence of the Socieiy, its founde
own expense erected and presented to it a most suitable building,
presented an extensive collection of valuable scientific works, a
mately endowed it with the sum of £20,000.

(5) In addition to the very substantial gifts before mentioned,
promotion of science, Sir William Macleay has by his will beque
the University of Sydney the sum of £12,000 for the foundation o
of Bacteriology, and has set apart the further sum of £35,000
foundation and endowment after the death of his widow of four fel
for the encouragement of scientific research, to be tenable by grad
science of Sydney University.

It is decided that the proposed memorial shall take the form of
of original contributions by Australasian scientific workers, with
tions of a superior character, preceded by a memoir and portra
deceased friend, because it is felt that this will me much more in ac
with his own ideas and with the spirit of his various benefaction
monument of stone or bronze, and that such a volume will not onl
extend the knowledge of his great liberality, but will be of lasti
to all scientific men interested in studies and pursuits which s
interested him.

The membership of the Society consists, at the present
9 Hon. Fellows, 78 Fellows, 14 Corresponding Membe
one Associate.

The Council has made arrangements through the cou
the Librarian of the S. A. Institute Circulating Library,
the key of the Society's room hung in a convenient pla
easily accessible to those members who wish to consult th
in the Society's Library.

Numerous favorable replies have been received from Eu
and American Scientific Societies agreeing to mutually ex
their publications with those of this Society. The titles
appear at the end of the Society's Annual Volume.

The Council having learned during the past year t
Government of Victoria contemplated reducing the worki
of Baron F. von Muellor, at once wrote to the Royal So
Victoria, offering to co-operate in any way in any moveme
might be taken towards approaching their Governme
pointing out to it the extreme undesirability of curtail
published results of Baron F. von Muellor's labors; as the
of the greatest scientific and economic value, not only to V
but to Australia generally.

It will be a matter of satisfaction to the Members to kn
the Council, with the permission of Sir Thomas Elder, K.C
has decided to print as a separate memorial volume or v

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fic results of the Elder Exploring Expedition; and, ng on the authority of the munificent author of the n, a portion of the results is already in type, and that a be issued almost at once, the editorial supervision being by Prof. Tate, the Elder Professor of Natural Science iversity of Adelaide. During the past year the mem e monthly meetings have had frequent opportunities of the choiser portions of the collections of this n.

uncil appointed Mr. Robert W. Chapman, M.A., to act iety's delegate at the Hobart Meeting of Australasian on for the Advancement of Science.

mation of an Astronomical Section of the Society has oved, and its rôle already includes some thirty members atement of receipts and expenditure by the Hon. (W. Rutt, C.E.) shows that a substantial balance still o the credit of the Society.

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THE TREASURER IN ACCOUNT WITH THE ROYAL SOCIETY OF SOUTH AUSTRALIA.

Dr.	£ s. d.	£ s. d.
October 1st, 1891.		
To Balance		333 17 2
" Subscriptions—		
Royal Society	77 13 0	
Field Naturalists' Section ...	18 10 0	
Microscopic Section	3 10 0	
		99 13 0
" Grants—		
Government	96 18 0	
Barrier Miners' Association (towards Printing Map of Barrier District)	5 0 0	
		101 18 0
" Interest		10 8 6
" Sale of Transactions		6 15 0
		£552 11 8

Cr.	£ s. d.	£ s. d.
By Cost of Transactions—		
Printing and Binding	132 12 0	
Illustrating	66 14 6	
Publishing	13 0 1	
		212 6 7
" Wages—Caretaker and Assistance in Library		2 5 0
" Printing, Postage, Telegrams, and Stationery		9 18 8
" Advertising		7 10 5
" Library—Shelving, &c.		1 7 0
" Grants—		
Field Naturalists' Section ...	25 0 0	
Microscopical Section	5 10 0	
Astronomical Section	10 0 0	
McLeay Memorial Volume ...	2 2 0	
		42 12 0
" Stamp Duty		0 2 6
Sept. 30, 1892.		
" Balance—		
Union Bank	30 18 6	
Savings Bank	245 11 0	
		276 9 6
		£552 11 8

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For the Year 1891-92.

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———— Proceedings Royal Society of Victoria, vol. IV
1 (new series); Transactions ditto, vol
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———— Working Men's College Report, 1891.

WESTERN AUSTRALIA.

Perth—Government Geologist's Office Annual Report,
Report on Gold Fields, Kimberly, W.A.

MONOGRAPHS AND BOOKS.

Presented by the respective Societies, Museums, Governments
Authors.

Abercrombie, Hon. John—Trip through Eastern Caucasus;
Pamphlets.
Brüch, L.—Australian Medical Directory.
Dendy and Lucas—Study of Botany.
Hamilton, Sir Robert G. L., K.C.B.—Inaugural Address
Assoc. Advanc. of Science, 1
Hayter, H. H., C.M.G., Government Statist, Victoria—Vict
Year Book, vol. II., part 2, 1890
Liversidge, A., M.A., F.R.S.—Notes on some N.S.W. Min
No. 6.
Missouri Botanical Garden—Annual Report.
Mueller, Baron F. von—Iconography Australian Salsola
Plants, dec. VIII., IX.

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IST OF FELLOWS, MEMBERS, &c.

NOVEMBER, 1892.

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ked (F) were present at the first meeting when the Society was d. Those marked (L) are Life Fellows. Those marked with an have contributed papers published in the Society's Trans-

es in the addresses should be notified to the Secretary.

HONORARY FELLOWS.

KELY, SIR HENRY, K.C.M.G., K.C.B., F.R.S., Royal Colonial Institute, London.
ERY, R. L. J., F.R.S., F.R.A.S., Government Astronomer, Victoria, The Observatory, Melbourne, Victoria.
ERIDGE, ROBERT, Palæontologist to the Geological Survey of New South Wales, Sydney.
RAN, A., LL.D., Sydney, New South Wales.
L, H. M., Hobart, Tasmania.
VOIS, SIR W. F. D., K.C.M.G., C.B., F.R.S., Ex-Governor of South Australia, London, England.
TLE, E.
ELLER, BARON F. VON., K.C.M.G., F.R.S., M. and Ph.D., F.G.S., F.R.G.S., F.C.S., C.M.Z.S., &c., &c., Government Botanist, Melbourne, Victoria.
SELL, H. C., B.A., F.R.S., F.R.A.S., Government Astronomer, N.S.W., Sydney, New South Wales.

CORRESPONDING MEMBERS.

LEY, F.M., F.L.S., Colonial Botanist, Brisbane, Queensland.
UD, T. C., F.C.S., Manager Wallaroo Smelting Works, South Australia.
NANT, JOHN, F.G.S., F.C.S., Inspector of Schools, Camberwell, Melbourne, Victoria.
LSCHE, PAUL, Inspector of Police, Palmerston, Northern Territory, Australia.
DSTEIN, J. R. Y., Melbourne, Victoria.
TER, H. H., M.A., C.M.G., F.S.S., Government Statist, Melbourne, Victoria.
IPE, REV J., Hermannsburg, Charlotte Waters, South Australia.
GILLIVRAY, P. H., M.R.C.S., F.L.S., Bendigo, Victoria.
DEN, J. H., Curator Technological Museum, Sydney, New South Wales.
SKELL, W. M., Wellington, New Zealand.
OLAY, REV. C. G., Fremantle, Western Australia.
HARDS, MRS. A., Beltana, South Australia.
ULZ, REV. LOUIS, Hermannsburg, Charlotte Waters, South Australia.
RLING, JAMES, F.L.S., Assistant Geological Surveyor, Victoria.

FELLOWS.

OCK, D. J., Adelaide, S.A.
AS, HON. J. H., M.L.C., Adelaide, S.A.

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1891. Ashby, Edwin, North Adelaide, S.A.
1887. Bagot, John, Adelaide, S.A.
1887. *Blackburn, Rev. Thomas, B.A., Woodville, South Austra
1890. Board, Gregory, Metallurgist Port Pirie Smelting Wor
Pirie, S.A.
1884. Boettger, Otto, Adelaide, S.A.
1886. *Bragg, W. H., M.A,, Professor of Mathematics Unive
Adelaide, S.A.
1882. Brown, L. G., Adelaide, S.A.
1883. *Brown, H. Y. L., F.G.S., Government Geologist South A
Adelaide.
1884. Bussell, J. W., F.R.M.S., North Adelaide, S.A.
1891. Calvert, A. F., Adelaide, S.A.
1888. Chapman, R. W., M.A., B.C.E., Lecturer on Mathema
Physics University of Adelaide, S.A.
1879. *Cleland, W. L., M.B., Ch.M., F.R.M.S., J.P., Assistant
Surgeon, Resident Medical Officer Parkside Lunatic
Lecturer on Materia Medica University of Adelaide, F
S.A.
1876. (L) Cooke, E., Commissioner of Audit South Australia, Ad
1880. Cox, W. C., Semaphore, S.A.
1887. *Dixon, Samuel, Adelaide, S.A.
1876. Dobbie, A. W., Adelaide, S.A.
1890. *East, J. J., F.G.S., Registrar School of Mines, Adelai
(Corresponding Member, 1884).
1871. Elder, Sir Thomas, K.C.M.G., Adelaide, S.A.
1887. Eyres, Thomas, Adelaide.
1886. Fleming, David, Adelaide, S.A.
1876. Fletcher, Rev. W. Roby, M.A., Kent Town, S.A.
1882. Fowler, William, Kulpara, S.A.
1889. Fraser, J. C., Adelaide, S.A.
1891. Gill, Walter, F.L.S., Conservator of Forests South A
Adelaide.
1880. *Goyder, George, Jun., Government Analyst South A
Adelaide.
1890. Gray, Rev. William, Tanna, New Hebrides.
1887. Grasby, W. C., Editor *Garden and Field*, Adelaide, S.A.
1861. Hay, Alexander, Adelaide, S.A.
1882. Henry, Alexander, M.D., Adelaide, S.A.
1891. *Holtze, Maurice, F.L.S., Director Botanic Gardens,
(Corresponding Member, 1882), Adelaide, S.A.
1883. *Howchin, Walter, F.G.S., Goodwood, S.A.
1883. Hughes, H. White, Booyoolie, S.A.
1891. Johnson, J., M.D., F.R.C.S., Medical Officer Mount
Hospital, Assistant Colonial Surgeon, Mount Gambie
1853. (F) Kay, Robert, General Director and Secretary S.A
Library, Museum, &c., Adelaide, S.A.
1884. Lendon, A. A., M.D., M.R.C.S., Lecturer on Forensic
and on Clinical Medicine University of Adelaid
Physician Adelaide Hospital and Children's Hospit
Adelaide, Adelaide, S.A.
1856. Lloyd, J. S., Adelaide, S.A.
1888. *Lower, O.B., Parkside, Unley, S.A.
1885. *Lucas, R. B., Adelaide, S.A.
1873. Magarey, A. T., Adelaide, S.A.
1874. *Magarey, Hon. S. J., M.D., M.L.C., Adelaide, S.A.
1853. Mayo, George, F.R.C.S., Adelaide, S.A.
1874. Mayo, G. G., C.E., Adelaide, S.A.

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RICK, E. T., B.A., Ramsbury, Hungerford, Wilts, England.
NEUX, A., F.L.S., Secretary Central Agricultural Bureau South Australia, Kent Town, S.A.
RRAY, DAVID, Adelaide, S.A.
TON, H. S., Brighton, S.A.
LIPS, W. H., Adelaide, S.A.
E, W. B., Adelaide, S.A.
RTSON, R., F.F.P.S., Adelaide, S.A.
IE, H. E., M.A., D.Sc., F.C.S., Professor of Chemistry University of Adelaide.
ER, F. E., M.D., Petersburg, S.A.
RS, R. S., M.D., Adelaide, S.A.
ELL, WILLIAM, Port Adelaide, S.A.
, WALTER, C.E., Adelaide, S.A.
M, M., Adelaide, S.A.
DERS, ERNEST C., Glenelg, S.A.
VAY, W. H., JUN., Adelaide, S.A.
T, JAMES L., Hyde Park, S.A.
ATON, THOMAS D., Blakiston, Little Hampton, S.A.
H, ROBERT BARR, Adelaide, S.A.
THE, J. T., B.A., B.E., Inspector of Schools South Australia, Glenelg, S.A.
LING, EDWARD C., M.A., M.D., F.R.C.S., Lecturer on Physiology University of Adelaide, Hon. Director S.A. Museum, Hon. Surgeon Adelaide Hospital, Adelaide, S.A.
KEY, J. J., M.A., Adelaide, S.A.
E, RALPH, F.L.S., F.G.S., Professor of Natural Science University of Adelaide.
IAS, J. D., M.D., F.R.C.S., Adelaide, S.A.
ER, J. G. O., F.L.S., Entomologist S.A. Museum (Corresponding Member, 1878), Adelaide, S.A.
D, CHARLES, C.M.G., M.A., F.R.S,, F.R.A.S., Government Astronomer, Postmaster-General, and Superintendent of Telegraphs South Australia, Adelaide, S.A.
DON, JOSEPH, J.P., Adelaide, S.A.
CO, JOSEPH C., M.D., F.R.C.S., Lecturer on the Principles and Practice of Medicine and Therapeutics and on Clinical Medicine University of Adelaide, Hon. Physician Adelaide Hospital, Adelaide, S.A.
INWRIGHT, E. H., B.Sc., St. Peter's College, S.A.
RE, W. L., Adelaide, S.A.
Y, EDWARD W., M.B., M.R.C.S., Lecturer on Obstetrics and Diseases Peculiar to Women and Children University of Adelaide, Hon. Physician Adelaide Hospital, Adelaide, S.A.
Y, SAMUEL J., D.C.L., Chief Justice and Lieutenant-Governor South Australia, Adelaide, S.A.
HITTELL, HORATIO, M.D., M.R.C.S., F.R.M.S., President Central Board of Health and City Coroner Adelaide, Adelaide, S.A.
LSON, JOHN, F.E.T.S., Goodwood, S.A.
TZ, A., Assistant Director S.A. Museum, Adelaide, S.A.

ASSOCIATE.

DGSON, MRS., North Adelaide, S.A.

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APPENDIX.

FIELD NATURALISTS' SECTION

OF THE

Royal Society of South Australia.

ANNUAL REPORT.

The Committee have to report as follows on the work of the Section for the year ending 30th September, 1892, this completing the ninth year of its existence.

Evening Meetings.—Eight evening meetings have been held during the year, the attendance at which showed a gradual improvement towards its close. The annual conversazione (held in November, 1891) was very largely attended, and a new feature of these gatherings was then introduced, viz., the exhibition of natural history objects by means of the oxyhydrogen microscope. The subjects of the papers read at the evening meetings have been of a varied character, and may be classified as follows:—Botany, 3; meteorology, 2; zoology, 1; geology, 1; miscellaneous, 1. Papers have been contributed by the following gentlemen:—J. G. O. Tepper, F.L.S., Maurice W. Holtze, F.L.S., R. W. Chapman, M.A., B.C.E., Captain Inglis, T. U. Scrutton, and E. Guest, whilst short addresses descriptive of exhibits have been given by Messrs. W. B. Poole, J. W. Bussell, A. Zietz, and D. J. Adcock. At these meetings there has usually been a fair number of exhibits, but the Committee would like to see more of the members contributing in this direction.

Excursions.—Towards the close of last year the interest in the excursions seemed to be waning, and consequently fewer have been held this year, the number being five. Those recently held, however, show a marked increase in the attendance, which, it is hoped will continue, as the practical study of Natural history out-of-doors was one of the chief reasons for the formation of the Section. The excursions include a dredging trip (the first after an interval of about two years), which proved a pleasant and successful outing.

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on of our Native Fauna and Flora.—A separate report Committee is presented, in which is recorded the grati lt of long-continued efforts to secure Government Farm nal Park, vested in Trustees. Several other matters of terest are dealt with in this report.

onding Members.—Your Committee regret that the hope in their last annual report as to the increased number ns expected from our corresponding members has not sed. Although the sending of objects of natural only one amongst many directions in which the corres- embers are supposed to assist us, such contributions add the interest of our evening meetings, and are eventually he disposal of the Public Museum. Your Committee e these distant members not to abate the practical nich many of them have in the past kindly shown in In their last report the Committee referred to the erived from the receipt of a paper written by a corres- nember (Mr. J. G. McDougall), and they, therefore, th much regret of the recent decease of that gentleman, rest in natural history was shown in many ways.

l Amalgamation with the Microscopical Section.— that there is in this city too great a multiplication of Societies, your Committee have proposed an amalgama- the Microscopical Section; feeling that such a union to the advantage of both Sections, and lead to the f time, labor, and expense. A Sub-Committee has been to consider the feasibility of the project.

hip.—During the year five persons were elected mem- Section, and eleven names have been struck off the number now on the roll (exclusive of corresponding is 97.

J. G. O. Tepper, Chairman.
W. H. Selway, Jun., Hon. Secretary.

20th September, 1892.

ANNUAL PROGRESS REPORT OF THE TIVE FAUNA AND FLORA PROTECTION MMITTEE.

nting their fourth annual report, the Committee have n directing attention to certain substantial results ring the year.

l Parks.—After a long-continued struggle, Government at last been vested in Commissioners in perpetuity as a Park. The board includes seven official and five

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nominated members. Through the exertions of the Committee the President of the Royal Society was chosen as one of the official members, whilst of the five Government nominees three, including our Chairman, were recommended by the Committee. After careful consideration of the whole matter, we have come to the conclusion that it is inadvisable to attempt to secure the reservation of any lands on the Onkaparinga, as suggested by the Hon. T. Playford. Nowhere can a good river frontage on both sides be obtained, owing to the division of the land into small blocks. The character of the country is also so poor that it seems to us to be useless to proceed further in this direction. It is very greatly to be deplored that through the procrastination of the Government, the only tract of land near the city with a good river frontage should have been lost to the public.

Forest Reserves.—The land at Mount Crawford has occupied much of the attention of the Committee, but so far the steps taken have proved practically futile. The need of a forest reserve for supplying the city and neighbourhood with timber will be felt as years go on.

Game Laws.—The Commissioner of Crown Lands has again issued the customary placards notifying the chief provisions of the Game Acts. The Committee acknowledge gratefully the action taken by the Commissioner and the police officials. In 1891 an amending Game Act affording protection to the kangaroo was passed by the Legislature at the instance of Mr. Hancock. Although defective in certain particulars the measure has been the means of accomplishing considerable good. The imperfect character of that measure has induced the Committee to draft an amending and consolidating Bill, which has been submitted to the Government, who have promised to view the matter favorably.

Other action.—At the last meeting of the Australasian Association for the Advancement of Science a paper dealing with the whole subject was read by the Secretary, and was the means of arousing considerable interest in the question. It is to be hoped that at the next gathering of the Association (to be held in Adelaide) concerted action will be taken, and that in the meantime similar movements will be started in the other colonies.

In conclusion the Committee trust that further perseverance will gain further important results.

SAML. DIXON, Chairman.
A. F. ROBIN, Hon. Sec.

Adelaide, 20th September, 1892.

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Dr. Receipts.	£	s.	d.
To Balance brought forward	4	4	1
" Grants from Royal Society	25	0	0
" Subscriptions	18	10	0
	£47	14	1

Cr. Disbursements.	£	s.	d.	£	s.	d.
By Printing—Proceedings	5	1	0			
General	3	17	6			
Chairman's Address ...	2	0	0			
(S. Dixon, 22.9.91.)				10	18	6
" Postages				4	7	0
" Conversazione				4	5	6
" Advertising				2	15	6
" Attendance				2	0	0
" Sundries				0	11	9
				24	18	3
" Subscriptions, as per contra, handed over to Royal Society				18	10	0
" Balance in Hand				4	5	10
				£47	14	1

Audited and found correct.

J. H. C. LANGDON, THOS. EVANS, } Auditors.

Adelaide, 19th September, 1892.

W. H. SELWAY, Jun., Hon. Sec.

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MICROSCOPICAL SECTION

OF THE

Royal Society of South Australia.

ANNUAL REPORT, 1891-92.

The Committee beg to submit their seventh annual report as follows:—The meetings of the Section have been very fairly attended considering the small number of active members now on the roll, and much interest has evidently been manifested in the various subjects brought forward.

We regret that several members have resigned during the year, and amongst them our Chairman, Mr. J. Colbourne, who has removed to Sydney. We shall feel the loss very much, as he was one of those who joined on the formation of the Section, in August, 1885, and he has always taken an active part in it as far as his time would allow.

Only two excursions have been held during the year, one of which was a dredging expedition down the Port River, in conjunction with the Field Naturalists' Section. Several others were arranged for but had to be given up in consequence of the bad weather.

We are not able to report any additions to the library since last year, but a large number of Microscopical Magazines, which have passed round to the members, are in the hands of the binder, and will shortly be available for issue. The Council of the Royal Society having lately handed over for the use of members of the Section their bound volumes of the Journal of the Royal Microscopical Society, members are now able to consult this valuable publication. In addition to this the following magazines are subscribed for by the Section, and are issued to members to read at home:—"Journal of the Queckett Club," "The American Microscopical Journal," "The International Journal of the Microscopical Science, &c."

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The number of members at present is 24, and the average in attendance at the meetings has been 9.

The following subjects were discussed at the meetings :—

1891.

Oct. 13. Exhibition of objects, photo-micrographs, &c.

Nov. 10. Demonstration on measurement of aperture of objectives, by Mr. W. B. Poole.

April 12. Demonstration of photo-micrography, by the Secretary, Mr. J. W. Bussell.

May 10. Remarks on mouth parts of locusts, illustrated by mounted specimens, by Dr. Whittell.

June 14. Gossip meeting and exhibition of objects.

July 12. Paper on fermentation, by Mr. A. Dale.

Aug. 9. Remarks on secondary structure of diatoms, illustrated by photo-micrographs, shown by lantern, by Mr. W. B. Poole.

The balance-sheet submitted herewith shows a balance of £3 9s. 0d. in hand after repayment of subscriptions handed over to the Treasurer of Royal Society.

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MICROSCOPICAL SECTION OF THE ROYAL SOCIETY OF SOUTH AUSTRALIA.

Statement of Receipts and Expenditure for Year ending 30th September, 1892.

Receipts.	£	s.	d.	Expenditure.	£	s.	d.
Balance in hand 30th September, 1891	3	12	5	Magazines	1	8	6
Subscriptions received	3	10	0	Advertising	0	6	0
Balance due Secretary	0	1	0	Stationery	0	4	6
				Postages	0	11	11
				Attendance	1	2	6
				Subscriptions Paid Royal Society	3	10	0
	£7	3	5		£7	3	5

Audited and found correct.

C. C. PRESGRAVE, Auditor.

Sept. 17, 1892.

D. FLEMING, Treasurer.

W. J. BUSSELL, Hon. Secretary.

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Vardon & Pritchard, Printers, Adelaide.

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TRANSACTIONS

OF THE

ROYAL SOCIETY of SOUTH AUSTRALIA.

VOL. XVI.

[With Thirty-three Plates and a Geological Sketch-Map.]

EDITED BY PROFESSOR RALPH TATE.

1892-1896.

Adelaide:

W. C. RIGBY, 74, KING WILLIAM STREET.

Parcels for transmission to the Royal Society of South Australia, from Europe and America, should be addressed "W. C. Rigby, care Messrs. Thos. Meadows & Co., 35, Milk Street, Cheapside, London."

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PREFACE.

In 1891, Sir Thomas Elder, whose name is inseparable from Australian exploration, equipped an exceptionally well-organised party to explore the untrodden country in the interior of this continent. The expedition left Warrina, on the Great Northern Railway, 633 miles from Adelaide, with the intention of exploring the country to the westward lying between the parallels of 27° and 29°; however, the unfavorable character of the season prevented the instructions of the promoter from being carried out, and the only new country passed over was on the traverse from Cavenagh Range to Victoria Spring. On reaching Annean Station in the Murchison District of West Australia in January 1892, the party was recalled.

The Journal of this Expedition, written by the leader, Mr. David Lindsay, was published in 1893, under the auspices of the South Australian Branch of the Royal Geographical Society of Australia.

The publication of the Scientific Reports of the Expedition was undertaken by the Royal Society of South Australia; but the issue of Part 1 and Part 2 having exhausted the available funds of the Society the further publication of the Reports was abandoned. Now, after the lapse of three years, through the generosity of Mr. Robert Barr-Smith, who has defrayed the entire cost of the publication of Part 3, Vol. XVI., which was reserved for the Scientific Results of the Elder Exploring Expedition, is finally completed.

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The Geological map forming part of this volume is based on the topographical survey made by the Leader of the Expedition and his Assistants, inserted on it are the chief locality-names and the position of each camp (indicated thus, ⊙ 39). The map will, therefore, serve as a reference for the geographical locations quoted in the text of this volume.

The liver-worts were forwarded, through Baron F. von Müeller, to Prof. Stephani for identification; but beyond the intimation that all of the species, five in number, were diagnostically unknown, no report has reached me from that expert.

Among the Crustacea collected at Upper Arkaringa Creek in South Australia, the following two species have been reported on by Messrs. Spencer and Hall in the "Zoology of the Horn Expedition," 1895:—*Apus australiensis*, Spencer & Hall, and *Eulimnadia rivolensis*, Brady.

EDITOR.

May 23, 1896.

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TRANSACTIONS

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ROYAL SOCIETY of SOUTH AUSTRALIA.

VOL. XVI., Part I.

EDITED BY PROFESSOR RALPH TATE.

[With One Plate.]

ISSUED DECEMBER, 1892.

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VEGETABLE EXUDATIONS.

By J. H. MAIDEN, F.L.S., F.C.S.,

r Technological Museum, Sydney, and Botanist Forest Department, Sydney.

PREFATORY NOTE.

vegetable exudations brought home by the Expedition of :—

One Manna *(Myoporum platycarpum).*
Two Gums *(Acacia leiophylla* and *Brachychiton Gregorii).*
Three Kinos *(Eucalyptus tessellaris, E. incrassata,* and *E. incrassata, var.).*
Two Resins *(Callitris verrucosa* and *Xanthorrhœa Preissii).*

gums, kinos, and resins present no remarkable features. anna is, however, a more interesting substance, and h it has been collected hundreds of times, and has been rought under the notice of Australian scientific men, yet appears to have ascertained its composition. It proves ist almost entirely of mannite, and its composition is lly identical with that of the ordinary commercial manna ope obtained from *Fraxinus Ornus.* This is the first true manna has been announced from Australia, as the d Eucalyptus-mannas are composed of sugars other than e. It would now be interesting to examine some barks er Australian vegetable products for mannite.

orum-manna is a perfect substitute for its European ke, and when freshly exuded its colour is not objectionable.

MANNA.

MYOPORUM PLATYCARPUM, *R. Br.*

N.O. *Myoporineæ :* "Sandal-wood."

cted 29th September, 1891, at Camp 65. Clayey sand. or's note :—

s gum *(sic)* was collected partly off a small tree 20 feet nd four inches in diameter, and is the one on which I gum (manna, *J. H. M.*) oozing out, and partly from under e tree had been bleeding profusely, and for a long time, e was a great deal of decaying gum (manna) round the

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trunk. I believe the cause of bleeding to be insect-bor had not sufficient time to examine it closely, as my can very restive. The taste is sweet as sugar."

In spite of its sweetness, Mr. Helms informs me, t natives were not partial to it, preferring the gum of *leiophylla;* probably because of its laxative property, a from any objection to its sweetness, inasmuch as the bla lerp and Eucalyptus-mannas, honey stored by bees, and a the honey-laden flowers of certain plants. It will be reme that Sir Thomas Mitchell offered sugar to an aborigina who spat it out with every manifestation of disgust, blacks usually do so with any edible to which they are u tomed.

That other natives (at least those of western New Wales) do eat of this manna is borne out by the followin ment by the late K. H. Bennett, in Proc. Linn. Soc., N VII., 351. It is well known that Mr. Bennett's knowledge matters was both extensive and accurate.

"During the hot summer months another and totally d looking substance exudes from the trunks and branches of these trees in large quantities. This substance when exuding from the tree resembles a thick froth, either pure and resembling snow, or of a pink or rose colour. Th dations assume various forms, and become solidified by e to a certain extent to the air. Sometimes they are in l large as a man's hand, and sometimes in the form of stalacti a foot long, as large as an ordinary candle, and gradually t to a point This substance is of a highly saccharine natu a peculiar sickly sweetness; it melts in the mouth like o sugar; the natives are very fond of it, and either eat i dissolving it in water make a kind of drink."

The sample of manna collected by the Expedition at fir resembles a brownish earthy substance, *e.g.*, a marly soil ing much lime. On closer examination it is seen to have a tinge, while selected portions are quite white or cream-col It is vesicular in structure, soft and friable, sweetish and gritty to the taste. Should a demand for it for medicin poses spring up, it could be obtained quite pale colour pure, and in considerable abundance, if it were system collected as is the product of *Fraxinus Ornus.*

---

* In the district of Fowler Bay, the native name of the manna i man," that of the sandal-wood "poolkerah;" according to Mrs. the fresh manna is quite white, and is full of insects, but becom oured with age.—EDITOR.

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MICROSCOPICAL EXAMINATION.

the manna is observed under a lens, slender, bright, crystals are observed, principally in the hollows of the hen examined under the miscroscope, they are found to n bright colours, principally blue, green, and purple. als are rhombic prisms with brachypinacoid faces; stals extinguish parallel to the principal axis. When ite is removed, purified, and crystallized from water, nt crystals are formed which do not polarize in colours, casionally, and then very faintly.

CHEMICAL EXAMINATION.

nanna be boiled in dilute alcohol, and filtered hot, the n becoming cold, consolidates into a crystalline mass. e stirred with alcohol, filtered, and well washed with n the filter, the dark-coloured substances contained in a will be removed, and also a portion of the mannite. idue be now dried, then dissolved in water, and crystal- that medium, the crystals may be purified by two or tallizations from water and alcohol. When thus purified, lline substance only reduces alkaline copper-solution to lightest degree on boiling, although the manna itself ehling's solution very readily.

anna melts at 158-9° C., while the purified mannite 60-1° C. A specimen of mannite freshly prepared from -manna melted, at the same time and under precisely conditions, at 161° C.

ESTIMATION OF GLUCOSE.

ams of the manna were dissolved in water, made up to It required 174 cc. to reduce 10 cc. of Fehling's ution (10 cc. = 0·05 gramme glucose). The manna contains 2·87 per cent. of a glucose.

ams of the same manna were dissolved in water, boiled e hydrochloric acid for half an hour, and then made up . This solution required 148 cc. to reduce 10 cc. of solution = 3·38 per cent. of a glucose after inversion, tly we have 3·38 − 2·87 = ·51 per cent. of a sugar or ner than a glucose.

ANALYSIS OF THE CRYSTALLINE SUBSTANCE FOUND IN THE MANNA.

bstance was purified as much as possible *without* the aid l charcoal. It was repeatedly crystallised from water ol, and was eventually obtained almost white. The re anhydrous. Analyses made 20th July, 1892.

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Taken for analysis, 6·326 grains.

6·326 grains gave 9·01 grains CO_2 and 4·30 grains H_2O.

$CO_2 = 9·01$	$= 2·457$	$C = 38·84$ %	$= 323$
$H_2O = 4·30$	$= ·478$	$H = 7·556$ %	$= 755$
Oxygen, by difference	$= 3·391$	$O = 53·604$ %	$= 335$
	6·326	100·000	

From these figures we may consider the formula $C_6H_{14}O_6$.

From this analysis, and determinations of melti crystalline form, &c., there is no doubt that the sub mannite.

A second combustion of the mannite was made, th obtained confirming the previous result. They are give

6·345 grains were taken for analysis.

6·345 grains gave 9·11 grains CO_2, and 4·316 grains H_2O.

$CO_2 = 9·110$	$= 2·485$	$C = 39·16$ %	$= 326$
$H_2O = 4·316$	$= ·479$	$H = 7·55$ %	$= 755$
Oxygen, by difference	$= 3·381$	$O = 53·29$ %	$= 333$
	6·345	100·00 %	

$= C_6H_{14}O_6$ (mannite).

MISCELLANEOUS.

The manna contains—

3·5 per cent of moisture,
1·1 " ash,

a portion of which was dirt, as the manna is somewhat as already stated.

The manna contains no tannic acid; its contact with and dark colour might lead one to expect at least a trac

It only ferments in the slightest degree after two da ment with yeast.

QUANTITATIVE ANALYSIS OF THE MANNA (SUMMAR

The manna was dissolved in water, filtered, alcohol acetate added, which precipitated a small portion of stances in solution. After removing the lead by sulp hydrogen, and evaporating to dryness, the residue wa with boiling 90 per cent. alcohol; this was dried and In this way 89·65 per cent. of mannite was found.

We may therefore conclude that picked samples of th from *Myoporum platycarpum* contain from 85 to 90 pe mannite.

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he above results the composition of the manna may ated :—

Mannite	= 89·65
A glucose	= 2·87
Other sugars	= ·51
Moisture	= 3·50
Ash with sand	= 1·10
	97·63
s removed by lead-acetate,	
l loss	2·37
	100·00

GUMS.

Acacia leiophylla, *Benth.*

N.O. *Leguminosæ:* "Yanwilli" of the natives.

ed 25th October, 1891, on clay soil at the Fraser Range. shrubs, 4-10 feet.

lms informs me that this gum is largely used for food tives, and so highly is it esteemed by them that they illing to part with even a small quantity of it. In Australia it has been recorded to yield a useful gum. cial report it is stated that it "is recommended by the aculty for its strengthening properties," though it has laim to that recommendation than many other wattle-e.

m is a perfect substitute for gum-arabic, and would be if obtainable in large quantities. It is readily and oluble in cold water. It would require sorting for the as even in the small sample received there are three portions being quite brown and almost opaque, while tions are colourless-transparent and yellowish-trans-spectively. The gum strongly resembles many specimens gums I have examined from the western parts of New ales, *i.e.*, from arid country; the wattle-gums of inferior being obtained from the coast districts, with compara-h rainfall.

emical composition of the present sample hardly differs t of gum-arabic. It contains 13·2 per cent. of water, ent. of ash, which consists principally of calcium car-th a trace of sulphuric acid, but no phosphoric acid.

account of the composition of Australian Acacia-gums, aper, "The Chemistry and Commercial Possibilities of ums," Pharm. Journ. [3], XX., 869; 980 (1890).

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BRACHYCHITON GREGORII, *F. v. M.*

N.O. *Sterculiaceæ*: "Kurrajong."

Sample 1.—Collected 13th September, 1891, at C centre of the Victoria Desert. Granite formation.

Sample 2.—Collected 16th November, 1891, from granite formation.

The properties and composition of this gum are iden that of other gums from the same genus, and describe my paper, "Sterculia-gum: its similarities and dissimi Tragacanth," Pharm. Journ. [3], XX., 381, to which the referred. Briefly, the present sample resembles the ru a spermaceti candle. It is in vermiform and flaky pie of them are white, but some of them are stained y brown.

KINOS.

EUCALYPTUS TESSELLARIS, *F. v. M.*

N.O. *Myrtaceæ*: "Blood Gum."

Collected 15th August, 1891, at Camp 33, near Barr Sand on granite.

This kino has a sweetish odour, is of a burnt-sie colour in bulk, and, owing to its friable nature, it is in pieces. The powder is of a mahogany colour. It di boiling water, but deposits catechin on cooling. Th (one gram to the litre) is turbid, and of a very pale ora colour.

It was analysed 1st June, 1892*, with the following

Tannic acid and catechin	88
Moisture	10
Ash	
Impurities (Ligneous matter, &c.)... ...	
	100

A determination of the tannic acid according to L process gave 68·5 per cent.

This kino belongs to my Turbid Group.† A descrip Queensland sample of kino of this species will be found i referred to in the footnote. In comparing the two *E. tessellaris*, p. 417 of paper quoted, and *E. terminal* it will be observed how close is the similarity between

* In kinos it is always important to state the approximate dat tion and analysis, as their composition alters with age.

† "The Examination of Kinos as an Aid in the Diagnosis of Part III., The Turbid Group. J. H. Maiden in Proc. N.S.W. [2], VI., 389.

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m the Barrow Range and the *terminalis*-kino. The ıces and the analyses are the closer now (July, 1892), as *ıinalis*-kino has aged nearly another year. This is a ıce, yet there is nothing discordant in the two more results obtained from *tessellaris;* they simply show the of variation possible in two perfectly well authenticated ɔm the same species.

EUCALYPTUS INCRASSATA, *Labill., var. a.*

N.O. *Myrtaceæ.*

ted 1st October, 1891, at Camp 67. Clayey sand. Height 30 feet.

kino belongs to my "Turbid Group." It is friable, and e in small pieces; it is of a dark sienna-brown colour, the being of a lighter tint. It is entirely soluble in hot ut deposits catechin on cooling. When made up to one r litre, the liquid has a pale orange-brown colour, though ose tint.

mposition, determined 7th June, 1892, is as follows:—

Tannic Acid and catechin ...	84·18
Moisture	14·70
Ash	·40
Impurities	·72
	100·00

ıthal's method gave a tannic acid equivalent of 44·5 per

ino of this species has not been previously examined.

EUCALYPTUS INCRASSATA, *var. b.*

"Mallee."

ɛt high. Collected 22nd October, 1891, at Fraser Range, y sand.

ɛino is bright-looking, friable, and with a colour resem- at of common garnets. Colour of powder raw-sienna. It y soluble in hot water, catechin being deposited on cooling. ɹuid (one gram to the litre) is turbid, and of a light brown colour, inclining to a rose tint.

ɔmposition may be stated as follows:—

Tannic acid and catechin ...	84·64
Moisture	14·60
Ash	·20
Impurities	·56
	100·00

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It was analysed 1st June, 1892.

Determination of tannic acid by Löwenthal's metho
per cent.

This kino belongs to my "Turbid Group;" and con
medium amount of catechin.

RESINS.

Callitris verrucosa, *R. Br.*

N.O. *Coniferæ:* "Pine."

Sample 1.—Collected on sand-hills at various places
Victoria Desert. No date. Collector's note:—"This
resin of tree with cones like enclosed, and different to
collected specimens."

A transparent colourless resin, having externally the
appearance characteristic of resins of this genus. It is
soluble in alcohol, and readily powders. Its composit
appearance in no way differ from that of the sandarach
merce, for which it is a perfect substitute. For further i
tion in regard to our indigenous *Callitris*-resins, see my
entitled "Australian and Tasmanian Sandarach" (Proc. R
Tasmania, 1889). The following additional note in re
this species may be given:—"The resin of *C. verrucosa* w
to make firm the union (after lashing) of the hard-wood
the reed, in the making of reed-spears by the aboriginals
toria. The resin was called by them bij-jin-ne." ("Abo
of Victoria," Brough Smyth, I., 306).

Sample 2.—Collected 3rd July, 1891, amongst granite
Camp 14. Collector's note:—"Up to 30 feet, diameter
base, but running up very conical. From trees and groun
resin runs."

Hardly differs in appearance and behaviour from the pr
sample.

Xanthorrhœa Preissii, *Endl.* (probably).

N.O. *Liliaceæ*: "Grass-tree"—"Gnora" of the nativ

Collected 18th September, 1891, at Camp 55, Victoria
Notes by collector:—"Sand hills. The trees had been
and large masses of the gum were collected around the ba
sand blown in while in the semi-liquid state. Some were
feet high, and 18 inches in diameter."

This resin is in largish pieces of a dark purple-brown co
is very impure from the admixture of sand and vegetable

Alcohol dissolves out 36 per cent. of a dark, rich-c
resin, having much the appearance and behaviour of that
from *X. arborea* under similar treatment.

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burned, 47·3 per cent. is removed, leaving 52·7 per cent.
ity, chiefly sand. Under the microscope is is interesting
ve that particles have become very much abraded on the
onfirmatory, of course, of the sand having been wind-

urther particulars in regard to *Xanthorrhœa*-resins, see
er on "Grass-tree Gum," Proc. Linn. Soc., N.S.W. [2].
1890), which includes some notes on the resin of the
nder present reference.

ire to acknowledge the valuable assistance I have re-
rom my laboratory assistant, Mr. Henry G. Smith, in the
tion of these exudations.

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LEPIDOPTERA.

By OSWALD B. LOWER.

Taking the collection as a whole, it is exceedingly p
adds but little to our entomological fauna. This is the
be regretted, as the opportunity for traversing the same
may never occur again. A remarkable feature in the c
is the inclusion of several world-wide species, notably, *
armiger, Hübn., and *Nomophila noctuella*, Sch., show
these introduced (?) species adapt themselves to different
and conditions. Another noticeable feature is the pa
Œcophoridæ in the collection. This family is repres
Australia by at least 2,000 species—I have 230 speci
own collection, collected within 20 miles of Adelaide-
find only *three* representatives in the collection is, to
least, perplexing. It will also be noticed that the da
pearance of *Trictena labyrinthica*, Don., is very much at
with the usual time. Most of specimens emerge in and
Adelaide during April and May, whereas those from the
were captured during October, at which time I have n
served them. In commenting on the general conditio
specimens received, I may say that the whole are in
order and, with the exception of those described as
taken at various periods both at Parkside and Blackwo
collection, if it does nothing else, shows the distributio
various species; but one would have thought to have s
of the Western Australian forms. The season just cl
been a very poor one from an entomological point of vie
as Adelaide and its environs are concerned, and conside
reports from the Interior, insect-life was probably at a
during the progress of the Expedition.

The following comprise the species received :—

Heterocera.

SYNEMONIDÆ.

Synemon, *Doubleday.*

S. pyrrhoptera, *n. sp.* Only one specimen. A mal
fine species captured at Fraser Range, 14th October, 189

S. sophia, white *var.* One fine specimen. A fem
Murchison district, February, 1892. This differs somew
the type, being more prominently marked with the whi

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ide, and one of the spots on the hindwing has an obscure
n suffusion in it on the upperside. Otherwise the same as
at Mount Lofty, S.A.

HEPIALIDÆ.

TRICTENA, *Meyrick.*

ABYRINTHICA, *Don.* Two male specimens at Fraser Range
ober, 1891. As before mentioned, the time of capture is
able. (Also taken at Parkside).

ARCTIADÆ.

EARIAS, *Hübn.*

CHLORODES, *Meyr.* One female specimen. Cootanoorina,
(Also taken at Parkside).

ANESTIA, *Meyr.*

MBROPHANES, *Meyr.* One male from Victoria Desert in
nber. I think it is very probable that the female of this
is apterous, I have taken a good number, and have had
from various correspondents for identification; but have
seen a female.*

LIPARIDÆ.

TEARA, *Walker.*

REBODES, *n. sp.* Seven specimens, all females, from Fraser
, in October.

NTERRUPTA, *Walk.* One female specimen. Locality not
(I have a male taken at Port Lincoln, S.A.).

DARALA, *Walker.*

IACROTA, *Meyr.* One fine male specimen of this species at
ia, in May.

OCHROPTERA, *n. sp.* One specimen. A male at Coota-
a in June.

BOMBYCIDÆ.

DETOLINIA, —.

LANCEOLATA, *Walk.* Two specimens. One at Mount
s, in August. One at Camp 10, June 28, 1891.

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ce writing the above I have obtained a female specimen from Mel-
, bred from the egg, the larva of which feeds on lichen dust, usually
on old posts. The imago, as anticipated, is apterous. For this
ation I am indebted to Mr. Ernest Anderson, of Toorak, Victoria,
s bred the species. 19-9-'92.

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Noctuina.

DASYPODIA, *Guenée.*

D. SELENOPHORA, *Guenée.* One specimen at Forest October ; in bad condition.

AGROTIS, *Hübner.*

A. INFUSA, *Boisduval.* One male. Fraser Range, Oct 1891.

ORTHOSIA, *Trim.*

O. LUCASII, *Butler.* Two specimens. One at Nilpena in one at Cootanoorina, in June.

O. TORTISIGNA, *Walker.* One specimen, Cootanoorina, in

O. SPODIAS, *Meyrick.* One specimen, Cootanoorina, in J

PRAXIS.

P. MARMORINOPA, *Meyrick.* One specimen, Cootanoor June.

HELIOTHIS, *Ochs.*

H. LEUCATMA, *Meyrick.* Three specimens at Mount S and Victoria Desert in August.

H. ARMIGER, *Hübner.* Two specimens, Mount Squires August.

Geometrina.

MONOCTENIADÆ.

NEARCHA, *Meyrick*

N. BUFFALARIA, *Gn.* One male specimen, Mount Squ August.

SELIDOSEMIDÆ.

OSTEODES, *Gn.*

O. PROCURATA, *Walker.* One male specimen, Mou Thomas, in July.

CHLENIAS, *Gn.*

C. ARIETARIA, *Gn.* Two specimens, male and female Nilpena in May, and Cootanoorina in June respectively.

PYRALIDINÆ.

NOMOPHILA, *Hübner.*

N. NOCTUELLA, *Schiff.* Three specimens, Mount Squir Victoria Desert, in August and September. This species is cosmopolitan.

TRITÆA, *Meyr.*

T. USTALIS, *Walker.* Seven specimens (extreme variet Nilpena and Cootanoorina, in May and June.

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XEROSCOPA, *Meyr.*

HILONEPHES, *Meyrick.* One specimen, Cavenagh Range, y.

HELLULA, *Gn.*

NDALIS, *Fabr.* One specimen, Cootanoorina, June, 1891.

Tortricina.

TORTRICIDÆ.

CAPUA, *Steph.*

ELANOCROCANA, *Meyrick.* One specimen, in May, at Nil-

ŒCOPHORIDÆ.

EULECHRIA, *Meyrick.*

ACHALINELLA, *Meyr.* One specimen. Mount Squires, t 29th.

CÆSYRA, *Meyrick.*

ELLARIS, *Meyrick.* One specimen. Victoria Desert, Sept-

MACROBATHRA, *Meyr.*

LTERNATELLA, *Walker.* One specimen. Victoria Desert, tember.

HYPONOMEUTIDÆ.

ENDROSIS.

ACTELLA, *H. S. (?)* One specimen, in bad condition, which s to be this species. Cootanoorina, June.

PTEROPHORIDÆ.

TRICHOPTILUS, *Wlsm.*

ENTETES, *Meyr.* Six examples, at Arcoeillina Well, in 891.

DESCRIPTIONS OF NEW SPECIES.

SYNEMON PYRRHOPTERA, *spec. nov.*

e, 44 mm. Head, antennæ, and thorax dark fuscous, æ annulated with white. Club whitish beneath. Palpi eneath, infuscated above. Legs fuscous-whitish. Abdomen s-fuscous, whitish beneath. Forewings elongate-triangular, oderately arched, hindmargin bowed; dark fuscous, very rly irrorated with lighter fuscous and whitish scales; a ark fuscous patch in disc before one-half, above middle, which is an oblique suffused streak of pale reddish, cen- whitish, from costa at one-half to before anal angle;

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two pure white transverse spots beneath costa at tw
upper one the larger; an obscurely-indicated transverse
darker spots from apex to anal angle, nearly parallel
margin; cilia fuscous, with whitish tips. Hindwings
markings black; a broad irregular hindmarginal fascia, n
at anal angle, from one-half of costa to anal angle, enclos
spots of ground-colour, one below apex, and one beyond
anal angle, the last hardly separated from ground-colou
margin broadly ochreous fuscous, cilia as forewings. U
dark-fuscous, basal area strongly suffused with ferrugi
oblique irregular wedge-shape streak of scarlet from imm
beneath costa at one-half, reaching half across wing; six
ovate transverse whitish spots, suffusedly edged with
orange from near beneath apex to half across wing. Hi
as forewings, a scarlet spot in disc, another beneath ape
a third immediately beneath first, a fourth immediately
and a fifth below and between fourth and fifth.

A distinct species well-characterised by the hindwing
one specimen is not in the best condition, so that the des
is a little loosely drawn up. The female may possibly be
coloured. One specimen, Fraser Range, October 14, 189

TEARA EREBODES, *spec. nov.*

Female, 42-50 mm. Head, thorax, abdomen, and le
fuscous, hairs of thorax yellowish tinged, tolerably
Abdominal segments and anal tuft orange, more pro
beneath. Antennæ ochreous. Forewings elongate, cost
straight, hindmargin obliquely rounded; uniform dark
minutely irrorated with paler; cilia fuscous, with a blac
at base. Hindwings with hindmargin rounded, slightly pa
forewings. Underside as upperside.

Seven female specimens; Fraser Range, in October.
possible the male will be found to be much lighter colour
usual with the *Teara*.

DARALA OCHROPTERA, *spec. nov.*

Male, 55 mm. Head, thorax, abdomen and legs pale
ochreous; thorax fuscous-tinged beneath. Abdominal s
fuscous. Antennæ white, pectinations about 12. Fo
triangular, costa slightly sinuate, hindmargin strongly
rather oblique, pale whitish ochreous, with fuscous marl
small fuscous basal patch, a curved thick line from benea
at one-fourth to inner margin at one-third, darker ante
blackish longitudinal ovate discal spot at one-third, and
transverse, beyond it at about one-half, centred with whiti
above middle; a narrow fuscous line from two-thirds of

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rds inner margin, strongly curved outwardly near costa, arly straight from discal dot; a broad fuscous suffusion lately beyond this, posteriorly strongly margined with , leaving a clearly-defined line of ground-colour between o lines: cilia pale ochreous. Hindwings as forewings, with argin rounded, strongly haired with fuscous towards base; rate quadrate patch of brown hairs indicating discal dot; dications of lines of forewings; a fuscous strongly-dentate m one-third of costa to one-third inner margin: cilia as gs. Underside colour and markings as forewings, first sent. Hindwings with two discal dots sharply centred hitish. Allied somewhat to *D. ocellata*, Walk.
specimen; Cootanoorina, in June.

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COLEOPTERA.

By REV. T. BLACKBURN, B.A.,

Hon. Curator for Entomology, S. Aust. Mus.

The *Coleoptera* collected by Mr. Helms in the interior o tralia comprise a considerable number of species previou described. There are very few brightly-colored species them, and most of the new ones are closely allied to well forms. It is probably hardly safe to generalise positively strength of this material, for although Mr. Helms' abilitie collector of *Coleoptera* are beyond suspicion, the season in the expedition happened to be made was so exceptionally d therefore unfavorable for the work of collecting, that it hardly likely any large proportion was obtained of the *Col* that occur in the district traversed. The family most ple represented in specimens is the *Curculionidæ*, by far the larg of the specimens appertaining to the sub-families *Leptopsi Amycterinæ*. Next to the *Curculionidæ* in respect of nu come the *Lamellicornes*, and of these more than half be the obscure and extensive genus *Heteronyx*. No other can be said to be more than sparingly represented. T valent type in the *Coleoptera* of this collection is distinctly and south-western. The most interesting insect collecte *Scaritid*, for which I find it necessary to propose a new name, and which I propose to call, in honor of Sir Thomas *Trichocarenum Elderi*.

CICINDELIDÆ.

TETRACHA.

T. Helmsi, sp. nov. Subtus piceo-brunnea, apicem versu acea; supra viridis plus minusve purpureo-micans, dibulis (apice excepto) labro palpis antennis pedi elytrorum apice testaceis; elytris antice fortiter minus punctulatis postice lævigatis. Long., 6½—8 l.; lat. 3⅛ l.

Very like *T. australis*, Chaud., but smaller, less nitid, wi testaceous apex of the elytra much smaller, the underside ently colored, the row of large punctures on the elytra ne suture scarcely marked, and the elytral puncturation co ably more sparse.

W. Australia; Murchison district.

T. pulchra, Brown. Lake Lefroy.

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CARABIDÆ.

GIGADEMA.

a, sp. nov. Sat breve, sat latum ; nitidum ; aterrimum nnis apicem versus fulvo-pubescentibus ; capite magno oculos minus constricto, labro minus elongato sparsis- punctulato ; prothorace quam longiori (maris fere tribus ibus, feminæ minus quam duabus partibus) latiori, liculato, disco transversim strigato vix punctulato, ibus ceteris fortiter sat crebre punctulatis, angulis is rotundatis partem interjacentem sinuato-truncatam is sat fortiter, feminæ vix manifeste) superantibus, ibus crenulatis fortiter rotundatis mox ante basin ue fere rectis, basi late emarginata ; elytris striatis, stitiis parum convexis puncturis sat magnis biseriatim rebre ornatis ; femoribus anticis subtus ad basin angu- dilatatis ; ligula in medio longitudinaliter planata, planata utrinque carinata (carinis retrorsum conver ibus). Long., 16—18 l. ; lat., 6 l.

mparatively short wide form, the large head, and the l-black colour of this species associate it with *ki*, Cast., from which it may be at once separated by its uter and less-finely pointed mandibles, by its shorter nd the very different sculpture of its elytra, the inter- which are less flat and much more closely and evenly punc- e punctures running (as in *Bostocki)* in two well-defined rows down each interstice (except close to the margin, ey become more confused), but being very much stronger, closely and evenly placed in the rows. It is very likely insect mentioned by Dr. Gestro (Ann. Mus. Gen., 1875, having been, in his opinion, mistaken by the Baron de for *G. Bostocki.*

xual differences in this species are very peculiar. I do there is any room for doubting that the two examples e are conspecific, nor, of course, can I doubt that the with the anterior tarsi subdilated and clothed beneath le. The other example, however, is the smaller one, and e narrower prothorax, the middle part of the front of more prominent than it is in the male. I notice that al dorsal segment in the male is obsoletely notched

G. longipenne, Germ., this species may be at once dis- d by, *inter alia*, its larger head, shorter labrum, ligula nally flattened and carinate, shorter and broader form ; *grande*, Macl., by the sides of its prothorax being crenu- strongly sinuate behind ; from *G. titan* by its wider and

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less parallel elytra, with interstices punctured in mo
rows.

Fraser Range.

G. mandibulare, sp. nov. Elongatum; parallelu
nitidum; piceo-nigrum, antennis apicem vers
pubescentibus; capite modico pone oculos modice
labro sat elongato; prothorace quam longior
dimidia parte, maris etiam magis) latiori, canalicu
transversim strigato in medio lævigato, partib
punctulatis, angulis anticis rotundatis partem int
sinuato-truncatam vix superantibus, lateribus
fortiter rotundatis mox ante basin oblique fere r
bisinuata; elytris striatis, interstitiis vix conve
fortiter sat crebre sat confuse punctulatis; femoril
subtus ad basin angulatim dilatatis; ligula ut *G.*
Maris mandibulo sinistro perlongo falciformi, dex
breviori intus ante apicem dente magno armato.
Feminæ mandibulis brevioribus, dextro apicem ve
dentato. Long., 17—22 l.; lat., $6\frac{1}{5}$—$6\frac{1}{2}$ l.

Distinct, *inter alia*, from *G. Bostocki* and *erem*
elongate parallel form and pitchy tone of colour; from *l*
by its very differently shaped ligula; from *grande*, Ma
ing to Mr. Bates' remarks on that species in E.M.M., N
though not according to Dr. Gestro's figure in Ann.
1875), by its prothorax not differing much in shape
from that of *titan*, *longipenne*, &c.; from *grande*,
figured by Dr. Gestro), by its prothorax much less p
front; from *titan*, Thoms. (according to Mr. Bat
Queensland specimens in my collection which I have re
that species, but not according to Dr. Gestro's figur
very differently shaped mandibles of its male; from *i*
Gestro, by its very elongate form; and from the othe
ably described species of *Gigadema* by the central part
of its prothorax devoid of puncturation.

The two specimens described above, which I believe
and female of one species, present slight differences
regard as accidental variations. In the female the læv
tion of the disc of the prothorax is considerably small
the male, moderately close puncturation occupying all t
except the central third part. In the female, mor
elytral interstices are more closely and confusedly punc
in the male, each interstice bearing about four irregul
punctures; while in the male the puncturation in m
falls into three, or even only two, fairly-defined r
strongly bisinuate base of the prothorax seems to be
character, and no other species of the genus that I hav

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s like this; the sickle-shaped left mandible of the male
nost as long beyond the labrum as the maxillary palpus,
right mandible bearing a very strong tooth about half-
veen its apex and the front of the labrum.
d Range.

TRIGONOTHOPS.

sciata, Chaud. Barrow Range.

PHILOPHLŒUS.

rus, sp. nov. Sat depressus; pubescens; ferrugineus;
horacis disco abdominis lateribus et elytris fuscis, horum
ibus et vittis singulis dorsalibus (postice late interruptis
picem versus in sutura conniventibus) testaceis; pro-
ace quam longiori fere duplo latiori, antice modice
rginato, postice obsolete lobato, ad latera utrinque
oso, latitudine majori longe ante medium posita,
ibus antice sat rotundatis vix angulatis postice sub-
atim convergentibus, angulis posticis obtusis; elytris sat
ertim sat subtiliter punctulatis, leviter striatis. Long.,
; lat., $1\frac{1}{5}$ l.
tarsorum intermediorum articulis nullis subtus squamu-
papillatis.

aracters of the intermediate tarsi in the male associate
ies with *P. luculentus*, Newm., &c., in the last section of
s, but its style of markings resembles that in *P. australis*,
others in the first and second sections; it is very much
han any previously-described *Philophlœus*, in this respect
g *Agonocheila*, but its facies and structure of palpi are
a *Philophlœus*. The pattern on its elytra is much like
. *angulatus*, Chaud., but having the discal vittæ narrower
reviated in front, as well as widely interrupted behind.
cturation of its elytra is evidently less fine and less close
P. angulatus, Chaud., but is finer and closer than in
pti, Germ., or *australis*, Dej.
Range.

us, sp. nov. Sat depressus; pubescens; ferrugineus;
ris fuscopiceis, lateribus sat late et vittis singulis (antice
e dilatatis) testaceis, his in quinta parte apicali deficient-
; prothorace quam longiori duplo latiori, antice sat
rginato, postice leviter lobato, ad latera utrinque circiter
toso, latitudine majori paullo ante medium posita,
ribus sat rotundatis, angulis posticis fere nullis; elytris
ertim subtiliter punctulatis, leviter striatis, interstitiis
m convexis. Long., 5 l.; lat., $2\frac{1}{5}$ l.
tarsorum intermediorum articulo 1° apicem versus, 2°
, 3° sparsissime, squamuloso-papillatis.

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This species seems to hover between the first and sections of the genus, the third joint of the intermediate the male being nearly devoid of papillæ beneath, but n If it be regarded as a member of the first section, th bearing a pattern together with the fine close puncturatio same, the number of prothoracic setæ and the normally sutural apex of the elytra will distinguish it from others section except *P. monticola*, Blackb., which *inter alia* h transverse prothorax, the hind angles of which are less rou As a member of the second section this species woul tinguished by the same characters (disregarding the form sutural apex) from all others of the section except *P. pu* Chaud., which is not really described by its author, bu compared with *australis*, Dej. (and in one respect with *E* Germ.); but that species seems to have the prothorax n and with hind angles less rounded off, and the elytral very different shape.

In the present insect the prothorax scarcely differs fr of *P. laticollis*, Blackb., except in being more deeply em in front. The discal vittæ of its elytra are so wide in fr they occupy the whole base except a little slight inf round the scutellum, and extend backwards gently narro near the apex of the elytra, where they do not meet. Th pale margin of the elytra is exceptionally wide.

Victoria Desert.

TRICHOCARENUM (gen. nov.).

Eutomæ valde affinis; corpus passim setis longissimis g vestitum; caput supra oculum puncturis magnis 4 instructum; humeri nulli; elytra puncturis ma seriebus sinis (præter seriem marginalem) instruc sternum antice irregulariter, et femora antica subt iatim confertim, crasse punctulata.

Apart from the characters mentioned above, I do not characters to distinguish this genus from *Eutoma*, but th ences specified appear to me so numerous and strongly that it would be misleading to refer to *Eutoma* th on which I found this new genus. The four large p above each eye (which are placed longitudinally, and are s from the eye by a very deep sulcus), the close series punctures arranged along both margins of the under su the front femora, and the strongly punctulate prosternu as the double row of large punctures running down each (in addition to a very close row of large punctures in th sulcus of both prothorax and elytra) will at once sepa genus from all scaritid genera heretofore characterised.

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ibiæ the external inferior ridges are placed much as in or certain *Carena* (e.g., *anthracinum*, Macl.). The ex- idge has about four distinct teeth above its large terminal e inferior ridge consists of about six teeth.

eri, sp. nov. Elongatum; nitidum; nigrum setis fulvis stitum, antennis (articulis basalibus exceptis) brunneo- bescentibus et setis brevibus vestitis; capite elytris itudine æquali quam prothorax nonnihil angustiori; hoc am longiori vix latiori; elytris quam prothorax plus quam plo longioribus. Long., 11 l.; lat., $2\frac{1}{2}$ l.

casual glance the head seems to be about the same width prothorax, and the elytra narrower than either; by ement the proportions are as given above. The frontal e deep, nearly straight (behind their front angle), and nt hindward, reaching well behind a line joining the hind s of the eyes; they are connected behind by a distinct rse sulcus. The orbits of the eyes are swollen behind, e eyes do not project beyond them. The antennæ are and moderately long and stout. The prothorax has a ined impressed dorsal line, and is impunctate, except in eral sulci, where there is a close-set row of punctures, each a long erect seta; its surface is obsoletely wrinkled trans- ; its front is nearly straight, the angles, however, pro- slightly forward; its sides are nearly straight from the indward (and slightly convergent) till they round off with- istinct angle into the base. The extreme basal part of the s thickly pitted with large setiferous punctures, of which uns hindward nearly to the apex, about half-way between ure and lateral margin and another row (reaching the etween the inner row and the lateral margin, which bears set row of punctures; these latter are not setiferous, but ossible the example before me is abraded; the general is almost lævigate. The legs are quite like those of a except in being much clothed with setæ, and in the character mentioned above.

ve named this most interesting insect after Sir Thomas

oria Desert.

CARENUM.

tum, Blackb. Victoria Spring.

CALLISCAPTERUS.

osus, Sloane. Victoria Desert.

PLATYTHORAX.

versicollis, Chaud. Upper Murchison River. (This species

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was known to me only by description, but I feel no
the correctness of my identification. The Baron de C
did not know the precise habitat of the type.)

PHILOSCAPHUS.

P. costalis, Macl. Upper Murchison River.

SCARAPHITES.

S. laticollis, Macl. Boorabin.

CLIVINA.

C. Australasiæ, Bohem. Murchison District.

C. Helmsi, sp. nov. Sat angusta ; sat cylindrica ; nitida
obscure ferruginea, supra picea, elytrorum lateribus su
rufescentibus, antennis palpis capite antice pe
testaceis ; capite inter oculos sat profunde longitu
sulcato ; prothorace antrorsum sat angustato, postice
lineatim impresso, quam latiori fere longiori ; ely
fortiter punctulato-striatis, striis apicem versus c
stria 4ª basi extrorsum contorta ; tibiis anticis
dentibus 4 instructis, dente summo parvo, 2° sat m
sat gracili cylindrico (apice obtuso) ceteros lon
superanti. Long., 3 l. ; lat., $\frac{4}{5}$ l.

This species may be placed in the "section" of M.
"Revision Gen. des Clivinides" in which the autho
C. Australasiæ. It is very distinct by the following ch
in combination :—Head with an extremely strong long
sulcus between the eyes, suture lateral margins and epip
elytra reddish testaceous, legs entirely testaceous with
knees faintly infuscate.

Cootanoorina.

GNATHAPHANUS.

G. aridus, sp. nov. Sat nitidus ; niger vel piceus, or
antennarum basi pedibus (nonnullis exemplis fe
picescentibus) et corpore subtus (hoc piceo notato)
rufo-testaceis ; prothorace transverso antice quam
vix angustiori, canaliculato, utrinque ad basin f
(foveis obscure punctulatis), lateribus rotundatis,
posticis rotundatis ; elytris profunde striatis, in
fortiter convexis, 3° 5° 7° que (hoc postice solum) p
seriatim ornatis ; mento haud distincte dentato.
4—5 l. ; lat., $1\frac{3}{5}$—$1\frac{4}{5}$ l.

A very distinct species ; its mentum without a distinct
tooth, together with elytra bearing three rows of punctu

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ish it from all the hitherto described Australian
hani.
ard Range, &c.
aidæ, Cast. Nilpena, &c.

SARTICUS.

rus, sp. nov. Sat robustus; nitidus; niger, antennis
pis pedibusque piceo-rufescentibus; prothorace leviter
nsverso, antice quam postice vix angustiori, leviter
aliculato, utrinque ad basin foveolato, lateribus et angulis
sticis rotundatis; elytris elongato-ovalibus, fortiter striatis,
iis obscure crenulatis, interstitiis sat planis (3° puncturis
seriatim ornatis); metasterno ad latera et segmentis
ntralibus sat fortiter punctulatis. Long., $4\frac{1}{2}$ l.; lat., $1\frac{4}{5}$ l.

small size of this *Sarticus* will distinguish it from all
sly described, except *cycloderus*, Chaud., and *ischnus*,
Its general form will separate it from both the latter.
ed with *cycloderus* it is of more robust appearance, with
ess narrowed in front, and consequently seeming more
and parallel. *Ischnus* is described as "of more slender
gant form than *cycloderus*," and its prothorax is said to be
narrower behind" (the prothorax of the present species
anything wider behind). From *cycloderus* this insect
fers by the presence of a row of three punctures on the
terstice of the elytra.
ard Range.

icornis, sp. nov. Minus convexus; nitidus; niger,
ennis apicem versus palpisque ferrugineis; prothorace
am longiori fere tertia parte latiori, postice quam antice
e angustiori, leviter canaliculato, utrinque ad basin
eolato, lateribus et angulis posticis fortiter rotundatis;
tris ovalibus, modice striatis, striis vix manifeste punct-
tis (lateralibus subobsoletis), interstitiis sat planis
puncturis 4—harum tribus anterioribus striam 3am tangent-
s—ornato); metasterno ad latera vix manifeste punct-
to; antennis gracilibus brevibus, prothoracis basin haud
ingentibus; prothorace antice in medio vix manifeste
rginato. Long., 8 l.; lat., 3 l.

gh this species has altogether the facies of *Sarticus*, its
atively slender and short antennæ, and the anterior pro-
margin almost failing in the middle distinguish it
from all its previously-described congeners. It should
d near *S. Aubei*, Cast., although its elytral striæ are not
absolutely impunctate as in that species. Its prothorax
like that of *S. discopunctatus*, Chaud., but with even

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more strongly rounded and more narrowly margined si
head is a little narrower and more elongate tha
S. discopunctatus, and the seventh and eighth elytral
much more distinct, though considerably fainter than t
the striæ. The punctures of the basal ventral segmen
well defined.

Everard Range.

PLATYNUS.

P. marginicollis, Macl. Nilpena; also Everard Range

DYTISCIDÆ.

BIDESSUS.

B. bistrigatus, Clk. Most of the examples of this sp
from the type in having the fuscous markings on
very sharply defined—consisting of two blotches
behind the other on the apical half of each elytron
example the two are united on each elytron in
large blotch, which is perfectly black.

ANTIPORUS.

A. Gilberti, Clk. Upper Arkaringa.

NECTEROSOMA.

N. penicillatus, Clk. Everard Range.

LANCETES.

L. lanceolatus, Clk. Boorabin.

RHANTUS.

R. pulverosus, Steph. Nilpena, Barrow Range, &c.

COPELATUS.

C. lividus, Shp. Upper Arkaringa.

ERETES

E. australis, Er. Boorabin.

HYDROPHILIDÆ.

HYGROTROPHUS.

H. nutans, Macl. Everard Range.

HISTERIDÆ.

SAPRINUS

S. cyaneus, Fab. Widely distributed.

NITIDULIDÆ.

THALYCRODES.

T. (Thalyera) australis, Germ. Mount Squires.

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DERMESTIDÆ.

DERMESTES.

laverinus, Fab. Widely distributed.

LAMELLICORNES.

ONTHOPHAGUS.

chisoni, sp. nov. Minus nitidus; niger, antennis rufo-
eis clava testacea, corpore subtus pedibusque setis fulvis
rsim vestitis; capite haud transversim carinato, postice
olete punctulato, antice et in clypeo genisque trans-
sim ruguloso, clypeo antice triangulariter emarginato;
thorace æquali vix manifeste punctulato; elytris leviter
enulato-striatis, interstitiis planis lævigatis; pygidio
rsim leviter nec subtiliter punctulatis; sternis latera
sus sat fortiter punctulatis; tibiis anticis externe 4-
tatis.

s (?) tibiis anticis gracilibus, dentibus minus fortibus.

næ (?) tibiis anticis minus gracilibus, dentibus fortioribus.

ng., $3\frac{1}{5}$—$4\frac{1}{5}$ l.; lat., $1\frac{9}{10}$—$2\frac{1}{5}$ l.

emely like *O. muticus*, Macl., differing from it chiefly by
l-defined triangular emargination of the front of the
There is no trace whatever of transverse carinæ on the
nd the prothorax (except under a high power) appears
evoid of punctures. On either side of the prothorax
a tubercle, but scarcely a fovea. The smaller examples
e front tibiæ more slender than the larger ones, and less
toothed; they are no doubt the males. *O. inermis*,
lso resembles the present insect, but it also differs in the
f the clypeus being entire, and moreover it is a more
ecies.

hison River.

TROX.

elnani, Lansb. Various localities.

ri, Blackb. Victoria Desert.

nsis, Blackb. Nilpena, &c.

, Blackb.(?*-gigas*, Har., var.)

LIPAROCHRUS.

us, sp. nov. Late ovalis; glaber; rufo-ferrugineus;
idus; capite fortiter ruguloso; prothorace fortiter trans-
rso, a basi ad apicem angustato, postice quam antice fere
plo latiori, in disco sparsius subtiliter (puncturis trans-
rsis) latera versus crebrius magis crasse punctulato,
eribus minus late deplanatis, angulis anticis modice pro-
ctis parum acutis, posticis rotundatis, margine basali

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integro; elytris striatis (vix geminatim), inters planis maris (?) juxta strias utrinque subtiliter f minus subtiliter sat æqualiter punctulatis, lateribu latis tibiis anticis externe dentibus acutis 3 armatis 3½ l.; lat., 2 l.

The dark ferruginous red colour of this species see constant. It is near *L. politulus*, Macl., but is a mu insect, and shorter in comparison with its width, its more narrowed in front, and less strongly punctured, tibiæ more sharply dentate externally, &c. Compa *L. geminatus*, Westw., apart from colour, it is a little n gate, with the discal punctures of the prothorax c shaped (each puncture being a short, deep transverse and the depressed lateral margins of that segment much and with the elytral striæ much less distinctly geminat interstices evidently less flat. The colour, size, and striation of the elytra, in combination with the nitid surface, will distinguish it from all its described except *L. oblongus*, Har., which seems from its descri name to be a much more elongate insect.

Murchison District.

OCNODUS, *Burm.*

The following two species may be, I think, referre genus, which, however, does not seem to me very clear terised by its author, who, I should judge, had seen female. If I should be incorrect in this determin species in question would have to be regarded as form genus near *Ocnodus*. The principal discrepancy is in c with Burmeister's statement that the club of the an "small." In the *male* before me the lamellæ of the longer than the preceding five joints of the antennæ tog an example which I believe to be its female, they are shorter than the preceding five joints; in the other s which I have not seen a male) the lamellæ forming th the antennæ in the female are as long as the preceding f together. In a third species which I have described u name *O. lugubris* (Proc. Linn. Soc., N.S.W., 1891, lamellæ of the female are as in the latter. The anter these insects, however, are extremely like those of *Mœchi* respects, and as Burmeister calls the club in *Mœchidius*, also, I presume, it is a mere question of what one "small."

The two species described below are extremely like ea so like that I should hesitate to separate them if it wer a complete difference in the relation *inter se* of the cly

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in the one and the other species, analogous to the differ-
at distinguishes the third section of *Heteronyx* (in my
of the genus Proc. Linn. Soc., N.S.W., 1889 and 1890)
ne first section. In the first species described below
icollis) the suture between the clypeus and labrum is
ongly arched in an angular fashion, so that the summit
abrum rises towards the level of the upper surface of the
(though without very nearly reaching it), while in the
O. fallax) the suture is much nearer being straight, so
summit of the labrum is placed very much further below
l of the upper surface of the clypeus. In *O. lugubris*,
, the structure of these parts is as in *O. fallax*.

unctures of these insects are not, I think, truly squam-
though to a superficial glance they may appear so, but the
of each puncture, under a strong lens, appears to be un-
convex, or to consist of a convexity or granule intersected
or two fine striæ.

—Since writing the above I have determined to refer to
a third species, for which I had intended proposing a
neric name. On full consideration, however, although I
nk it probable that it may eventually be found desirable
ate it generically, I cannot overlook the possibility that
research may produce intermediate forms such as to prove
uctural differences merely specific. This third species
rom the other two principally by the different relation to
ner of the labrum and clypeus (in *O. spinicollis* and *fallax*,
o in *O. lugubris*, the perpendicular front face of the
is much elongated, so that the distance from the front of
urface of the clypeus to the mouth organs is very con-
e, but in *O. ferrugineus* the front face of the clypeus is
horter, the line of separation between the clypeus and
being almost as in *O. fallax)*, the vestiture of the under
of the tarsi (consisting in *O. spinicollis* and *fallax* of a
nass of setæ at the apex of each joint as specified by
ster in his generic diagnosis, while in *O. ferrugineus* this
e is much less strongly defined), and in the upper surface
body of *O. ferrugineus* being somewhat closely sprinkled
ort whitish recurved setæ, which are wanting in all its
rs except *O. decipiens*, Burm., the real type of the genus.
y add that *O. spinicollis* and *fallax* differ from all the other
yet described by the absence of setæ in combination with
roduced hind angles of the prothorax, *O. lugubris* by the
character without the latter, and that *O. ferrugineus* may
nce distinguished from *O. decipiens*, Burm., by its much
size and non costate elytra.

icollis, sp. nov. Femina. Robustus; modice elongatus;

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convexus; nitidus; subglaber; obscure piceus, palpisque dilutioribus; capite (præsertim clypeo rugulose, prothorace paullo minus crebre haud elytris crebre crasse vix squamose, pygidio (hoc fortiter carinato) crasse rugulose, corpore subtus fo crebre, punctulatis; puncturis vix manifeste squ clypeo antice sinuato-truncato, anguste reflexo-m ante oculos vix dilatato; prothorace quam long duplo (postice quam antice perparum) latiori, leviter bisinuatis, margine antico late fortiter bi emarginato, basi late rotundatim lobata, anguli acutis fortiter productis, posticis rectis (certo fortiter spiniformibus); elytris inæqualiter interru lete costatis; coxis posticis ad latera quam se ventrale secundum haud longioribus; tibiis anticis dentatis. Long., 5 l.; lat., $2\frac{2}{5}$ l.

Barrow Range.

O. fallax, sp. nov. A præcedenti differt statura majo rufescenti, pygidio minus crebre punctulato, clyp æqualiter rotundato a labro sutura fere recta divisc Maris pygidio convexo vix manifeste carinato, segm tralis quarti margine postico in medio reflexo. Lo 6 l.; lat., $2\frac{1}{2}$—$3\frac{1}{5}$ l.

Murchison district.

O. ferrugineus, sp. nov. Ferrugineus, antennarum clav flava; nitidus; fortiter punctulatus, puncturis setulas singulas pallidas ferentibus; elytris haud clypeo antice subemarginato fere truncato, ad latera oblique truncato; tibiis anticis extus juxta apicem tis. Long., $2\frac{4}{5}$ l.; lat., 1 l.

The prothorax is about half again as wide as long, convex, and even above; at its widest behind the mi sides strongly rounded, the front (which is rather emarginate, with sharp angles) considerably narrower base, the hind angles obtuse, but not rounded; the bas ately and widely lobed in the middle. The elytra are widest near the apex, where they are about a quarter w the prothorax; they are evidently wider at their base base (but not than the widest part) of the prothorax; th the elytra run in rows, the interstices being tra rugulose.

Victoria Spring.

HETERONYX.

H. fulvohirtus, Blackb. Murchison River.
H. piceus, Blanch. Murchison River.

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rus, sp. nov. Minus elongatus, sat convexus ; postice vix atatus ; sat nitidus ; obscure ferrugineus, antennis lpisque testaceis ; pilis brevibus sparsim vestitus ; capite nfertim rugulose, prothorace fortiter vix crebre, elytris ebre sat fortiter subsquamose, pygidio (hoc capillis erectis stito) obscure sat crasse, punctulatis ; clypeo brevi, antice e vix emarginato, ante oculos utrinque leviter prominulo tura clypeali fortiter carinata ; prothorace quam longiori postice quam antice) circiter dimidio latiori, lateribus sat undatis ante medium vix subsinuatis, basi sat rotundata bisinuata, angulis anticis minus productis vix acutis, sticis rotundatis (superne visis certo adspectu subrectis) ; rtris haud striatis (stria suturali excepta), vix transversim gulosis ; tibiis anticis extus fortiter acute 3-dentatis ; ro clypeum haud superanti ; antennis 9-articulatis ; coxis sticis ad latera quam metasternum fere dimidio brevior-s ; unguiculis subbifidis. Long., $4\frac{1}{5}$ l. ; lat., $2\frac{1}{5}$ l.

colore sat pallide ferrugineo.

apex of the basal piece of the claws is more sharply pro-han in most species with appendiculate claws, but scarcely ntly so to entitle the claws to be called truly bifid. The nation (distinct though slight) of the clypeus with other ers places this species in my tabulation (Proc. Linn. Soc. 1888, pp. 1328-31) beside *H. satelles*, Blackb., which, r, is a much smaller insect, with more coarsely punctured clypeal suture non-carinate, &c. Independently of the emargination of the clypeus, this species is much more llied to *H. victoris*, Blackb., and *viator*, Blackb., from the of which it differs *inter alia* by its prothorax being y even bisinuate (in *victoris* the same is distinctly lobed) , while it differs from both by its less closely and less y punctulate elytra, its evidently wider clypeus, and its y carinate clypeal suture.

chison District.

nus, sp. nov. Modice elongatus ; minus convexus ; postice x dilatatus ; sat nitidus ; piceo-ferrugineus, antennis lpisque testaceis ; pilis sat elongatis vestitus ; clypeo ebre rugulose capite postice magis crasse minus crebre, rothorace fortiter sat sparsim, elytris pygidioque (hoc longi-dinaliter carinato) fere ut prothorax, punctulatis ; clypeo revi antice late emarginato, ante oculos minus dilatato, tura clypeali carinata ; prothorace quam longiori (et postice uam antice) fere duplo latiori, lateribus fortiter rotundatis, asi leviter bisinuata, angulis anticis minus prominulis sat cutis, posticis rotundatis (superne visis certo adspectu sub-

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rectis); elytris haud striatis, transversim manifeste r
tibiis anticis extus 3-dentatis; labro clypeum ha
anti, antennis 9-articulatis; coxis posticis ad late
metasternum multo brevioribus; unguiculis s
Long., $2\frac{4}{5}$ l.; lat., $1\frac{1}{2}$ l.

The claws are not unlike those of the preceding spe
their apical piece is shorter and more slender in proport

In the tabulation (Proc. Linn. Soc. N.S.W. 1888, pp.
this species falls beside *H. darlingensis*, Blackb., from
carinate clypeal suture, stronger elytral puncturat
readily distinguish it. It is in some respects like the
species in miniature, but is very much more coarsely p
throughout. Compared with *H. satelles*, Blackb., it
elongate, and much more coarsely sculptured insect.

Upper Murchison River.

H. lobatus, Blackb. Fraser Range.

H. fervidus, sp. nov. Modice elongatus; sat convexus
vix dilatatus; sat nitidus; ferrugineus, antennar
testacea; pilis brevibus adpressis et alteris elongat
sat sparsim vestitus; capite crasse rugulose, p
dupliciter (subtiliter et crasse) minus crebre, elytris
sat leviter, pygidio sparsim vix fortiter, punctulati
antice fortiter emarginato, ante oculos sat fortiter
sutura clypeali impressa angulata; prothorac
longiori et postice quam antice fere duplo latiori,
modice arcuatis, basi leviter bisinuata, angulis anti
prominulis minus acutis, posticis rotundatis; elytris
inæqualiter substriatis hic illic transversim rugat
anticis extus fortiter acute 3-dentatis; labro clypeun
fortiter superanti; antennis 8-articulatis; coxis po
latera quam metasternum vix brevioribus; ungui
pendiculatis. Long., 5—$6\frac{1}{5}$ l.; lat., $2\frac{3}{5}$—$3\frac{1}{5}$ l.

The elytra are not genuinely striated, but their surf
places longitudinally convex (in some examples more n
than in others) which gives some appearance of striat
nearest approach to a defined stria is close to the suture.

This species belongs to the aggregate which I ha
'Group V.," and which falls in section III. of *Heteron*
species of that group are tabulated in Proc. Linn. Soc.,
1889, pp. 141-5. This species must be placed (in the tal
beside *H. nasutus*, Blackb., on p. 141; it is very nearly
nasutus, having an exactly similar clypeal structure a
lobed outline;" but is a considerably larger insect,
prothorax much more narrowed anteriorly; its elytra a
in their puncturation being quite of the kind called "sq

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n *nasutus* the elytral punctures are well defined and), and in being pseudo-striate.

hison District.

us, sp. nov. Modice elongatus; minus convexus; postice dilatatus; sat nitidus; obscure ferrugineus, antennis pisque dilutioribus; sparsim fulvo-pubescens; capite con-tim rugulose, prothorace fortiter subcrebre, elytris amose sat crebre nec subtiliter, pygidio fere ut prothorax, ıctulatis; clypeo antice late leviter emarginato, ante los minus dilatato, sutura clypeali subtili leviter arcuata; thorace quam longiori (et postice quam antice) plus quam ıidio latiori, lateribus modice arcuatis, basi vix bisinuata, ulis anticis minus prominulis sat acutis, posticis rotund-; elytris vix obsolete substriatis (stria subsuturali leviter ressa), vix transversim rugatis; tibiis anticis extus titer minus acute 3-dentatis; labro clypeum leviter minus superanti; antennis 8-articulatis; coxis posticis ad ra quam metasternum sat brevioribus; unguiculis ap-diculatis. Long., $5\frac{3}{5}$ l.; lat., $2\frac{7}{10}$ l.

culpture of the elytra being deep and somewhat close has appearance, but the roughness is not conspicuously trans-This species belongs to the same group (V.) as the pre-two. In the tabulation (cited above) it falls beside Blackb., and *Fraserensis*, Blackb., is closely related, from the former by its much larger size, the short basal its hind tarsi, &c., from the latter *inter alia* by the com-rounded-off hind angles of its prothorax. The relation to her of clypeus and labrum are almost as in *Fraserensis*, part of the labrum visible as the middle lobe of the d outline" of the head is evidently narrower in proportion ateral lobes.

hison District.

serensis, sp. nov. Minus elongatus, sat convexus; tice leviter dilatatus; subnitidus; ferrugineus; pilis tilibus adpressis et nonnullis erectis sparsim vestitus; peo confertim rugulose, capite postice quam clypeus magis sse paullo minus crebre, prothorace subsparsim, elytris amose sat crebre sat fortiter, pygidio minus fortiter us crebre, punctulatis; clypeo antice vix emarginato late truncato ante oculos extrorsum haud producto; pro-race quam longiori circiter dimidio (postice quam antice dimidio) latiori, lateribus leviter arcuatis, basi bisinuata lobata, angulis anticis acutis modice productis, posticis fere tis vix retrorsum productis; elytris haud striatis vix trans-sim rugulosis; tibiis anticis extus fortiter acute 3-dent-

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atis; labro clypeum sat late superanti; antennis 8-ar
coxis posticis ad latera quam metasternum parum bre
quam segmentum ventrale secundum sat lon
unguiculis appendiculatis. Long., 5 l.; lat., $2\frac{1}{2}$ l.

This species belongs to my section III., group V., s
II. (vide Proc. Linn. Soc., N.S.W., 1889, tabulation p
145), and in the tabulation would fall alongside *H. cygn*
which it differs by its much larger size, darker colo
coarsely punctulate elytra, and wider more robust build
underside the ventral segments are considerably more
punctulate, especially in the middle; the basal joint of t
tarsi is considerably shorter, scarcely exceeding half the l
the second joint.

Victoria Spring and Fraser Range.

H. cribriceps, sp. nov. Minus elongatus; sat convexus
vix dilatatus; subnitidus; piceo-ferrugineus, anter
pisque vix dilutioribus; supra fere glaber; cap
fertim rugulose, prothorace leviter vix crebre, elytris
subfortiter vix squamose, pygidio subtilius sat
punctulatis; clypeo antice vix obsolete emargina
oculos vix dilatato, sutura clypeali obsoleta; pr
quam longiori plus quam dimidio (postice quam an
dimidio) latiori, lateribus leviter arcuatis postice
visis) sinuatis basi vix bisinuata, angulis anticis mo
ductis minus acutis, posticis rotundatis (superne v
rectis); elytris vix obsolete substriatis, leviter tra
rugulosis; tibiis anticis extus fortiter parum acute
atis; labro clypeum vix superanti; antennis 9-arti
coxis posticis ad latera quam metasternum parum
ibus; unguiculis bifidis. Long., 4—$4\frac{1}{5}$ l.; lat., $2\frac{1}{5}$—

The clypeus has a well-defined elevated margin all a
front, which is only very widely (and scarcely distinctly) e
ate.

This is one of the few species of *Heteronyx* which
to oscillate between Sections II. and III. in my arrange
the genus, the labrum rising fully to the level of the clyp
scarcely protruding above it. However, as, from a certa
of view, the head has some feeble appearance of a "trilo
line," or rather of its curved outline being narrowly bul
in the middle, I think it is best placed in Section III.; a
placed it will fall in Group VI., which is tabulated in Pro
Soc., N.S.W., 1889, pp. 426-8. In that tabulation it
will be beside *H. rotundifrons*, Blackb., to which it app
me genuinely allied, although differing from it much by th
even puncturation of its head, the much finer and

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tion in general, the well defined external hind angle of coxæ, the presence of pseudo-striation on its elytra, &c.
Murchison River.

, sp. nov. Modice elongatus; sat convexus; postice er dilatatus; subnitidus; brunneo-ferrugineus, antennis isque testaceis; supra pilis brevibus suberectis parum re vestitus; clypeo confertim rugulose, capite postice sat se minus crebre, prothorace leviter sparsius nec subtiliter, is squamose sat crebre, pygidio fortius sat sparsim, tulatis; clypeo antice truncato, ante oculos haud dilatato, ra clypeali distincta recta; prothorace quam longiori duplo latiori, antice parum angustato, lateribus sat atis postice (superne visis) vix subsinuatis, basi vix uata, angulis anticis modice productis sat acutis, posticis ndatis (superne visis subrectis); elytris haud striatis, sversim rugulosis; tibiis anticis extus fortiter acute 3-atis; labro clypeum late leviter superanti; antennis iculatis; coxis posticis ad latera quam metasternum vix ioribus; unguiculis bifidis. Long., $3\frac{3}{5}$ l.; lat., $1\frac{4}{5}$ l.

sed margin of the clypeus is not continuous across the The "trilobed outline" of the head is very feebly , appearing as a slightly-trisinuate curve, the middle very much narrower than the lateral ones.

ecies belongs to the group in which I have placed the one, but its hind coxæ of about the same length as the um refer it to a different part of the tabulation of that ts place is on page 426 (loc. cit.), beside *H. incola*, rom which it differs *inter alia* by the much-less close ion of its head behind the clypeal suture, and the form nd angles of its prothorax, which when viewed from ear almost right angles, whereas in *H. incola*, they are nded-off from all points of view.
son District.

, sp. nov. Minus elongatus; sat convexus; postice r dilatatus; minus nitidus; ferrugineus, antennis sque testaceis; sparsim subtiliter pubescens; capite rtim rugulose, prothorace confertim subtiliter, elytris rtim subtiliter squamose, pygidio subtilius minus crebre, tulatis; clypeo antice truncato, ante oculos extrorsum producto; prothorace quam longiori plus quam lio (postice quam antice dimidio) latiori, lateribus sat tis, basi fere æqualiter rotundata vix bisinuata, angulis is obtusis vix productis, posticis rotundato-obtusis; is vix obsolete striatis; tibiis anticis extus bidentatis; clypeum late fortiter superanti; antennis 9-articulatis;

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coxis posticis ad latera quam metasternum haud bre quam segmentum ventrale secundum multo lon unguiculis appendiculatis, parte apicali quam basal breviori. Long., 4 l. ; lat., $2\frac{1}{10}$ l.

This species belongs to the last group of *Heteronyx* labrum overtopping the plane of the clypeus, the an jointed, and the claws appendiculate). It belongs to tha of the sub-group characterised as having the head and p not densely clothed with long erect hairs, the hind cox little shorter than the metasternum, and the puncturatio upper surface more or less close, fine, and even. In m tion of the species presenting these characters (Proc. L N.S.W., 1889, pp. 665 and 666) it is a little difficult to r insect fit satisfactorily, as it does not quite agree w middle lobe of trilobed outline narrowest" or "HH. mi widest," as the three lobes are about equal. As, how middle lobe in H. is *a good deal* narrower than the othe HH. not much wider than the others there will be n confusing the present species with any of those under H will be better to apportion it to HH. (p. 666), altering (line 6) into "not narrower," and then distinguishing *laminatus*, Blackb., by its front tibiæ having only t externally.

Victoria Spring and Fraser Range.

H. furvus, sp. nov. Sat elongatus ; sat convexus ; pos tatus ; sat nitidus ; setis brevibus sat crebre vestitu ferrugineus, antennis palpisque dilutioribus ; capi sat fortiter ruguloso ; prothorace subtilius sat crebr subtiliter minus crebre, pygidio sparsim subtiliter latis ; clypeo antice truncato ante oculos angulatim sutura clypeali sat profunde impressa recta ; p quam longiori plus quam dimidio (postice qua dimidio) latiori, lateribus modice arcuatis, basi vix b angulis anticis modice productis acutis, posticis ro elytris vix obsolete substriatis certo adspectu granulatis ; tibiis anticis extus dentibus magnis 2 dente parvo armatis ; labro clypeum late subfortit anti ; antennis 9 articulatis ; coxis posticis ad late metasternum haud brevioribus ; unguiculis appen Long., $4\frac{1}{5}$ l. ; lat., $2\frac{3}{10}$ l.

The raised margin of the clypeus is scarcely traceabl middle of the front. The "trilobed outline" of the fairly well defined, the three lobes subequal.

This species belongs to the same group of *Heteronyx* preceding. In the tabulation *(loc. cit.)* its place is

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ollaris, Blackb., with which, however, it has little real
and from which it may be distinguished among many
aracters by the basal joint of its hind tarsi being very
orter than the second joint. Its real alliance is certainly
restis, Burm., *elongatus*, Blanch., &c., forming the aggreg-
." (at end of page 666) in my tabulation, from all of
may be distinguished by its much less close punctura-
n the example before me the propygidium is entirely
but I judge this to be the result of some artificial
.

hison District.

ulus, Blackb. ? The condition of this example forbids its
positive identification.

COLPOCHILA.

tor, Blackb. Mount Squires.

ISODON.

is an example of this genus from the Murchison District.
nenclature of the genus presents difficulties (owing to the
ency of the descriptions of the named species) which I
en unable to overcome.

PHYLLIOCEPHALA.

-hirta, Blackb. Victoria Spring.

CRYPTODUS.

eps, Westw. Murchison District.

SEMANOPTERUS.

r, Blackb. Murchison District.

BUPRESTIDÆ.

MELOBASIS.

ri, sp. nov. Tota æneo-virescens; sat nitida; subtus et
capite sparsim albido-pubescens; capite plano sat crebre
fortiter subrugulose punctulato; prothorace quam
giori fere duplo (postice quam antice quarta parte)
ori, nullo modo canaliculato, ad basin in medio fovea
resso, sat fortiter sparsius (latera versus crebre) punct-
to, lateribus fere rectis, margine antico sinuatim
rginato, basi bisinuata, angulis posticis sat acutis
rorsum directis; elytris vix striatis, inæqualiter (latera
sus magis æqualiter) sat subtiliter seriatim punctulatis,
erstitiis sparsim (quam series vix minus fortiter) punct-
tis et hic illic obscure convexis; lateribus postice dent-
latis; prosterno antice declivi; corpore subtus fortiter
nctulato. Long., 6 l.; lat., $2\frac{1}{5}$ l.

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An obscure looking species of greenish æneous colour, much general resemblance to *M. nervosa*, Boisd., but wit elytral costæ of that insect, and having the prothor transverse, with its sides straighter, and its greatest widt base, &c.

Fraser Range.

M. sordida, Blackb. Fraser Range.

MERIMNA.

M. atrata, Hope. Victoria Desert.

NEOCURIS.

N. cærulans, Fairm. Fraser Range.

JULODIMORPHA.

J. Bakewelli, White. Murchison District.

STIGMODERA.

S. Burchelli, L. and G. Murchison District.

S. longicollis, Saund. Upper Murchison River.

S. hostilis, Blackb. Murchison District.

S. vittata, Saund. Victoria Desert.

S. atricollis, Saund. A short series of examples taken Victoria Desert seems to me to be referable to this s spite of a degree of variation that to a casual glance appears incompatible with such an identification. two specimens in the series are quite alike. The extre measures only $3\frac{3}{4}$ l. in length, and the pale colourin elytra is whitish-yellow, the markings and sculpture b much different from the typical form of *atricollis*, e the apical black colouring of the elytra, and the post fascia being very wide. I think this form may per conveniently named, and I shall call it "var. *desert* other examples are of varied size, up to 5 l. in len in all of them (except one, the largest) the three front of the elytra are united into a fascia, which, does not reach the lateral margins. In some of t oblique emargination at the sutural apex of the e extremely reduced in size, but is never quite abse apical spine is well developed in all. The colour g through the series approaches that of typical *atric* have been much puzzled by this insect, and have bo unwilling to call it *atricollis*, but in spite of misgi the point, much careful study has failed to bring to l constant character to distinguish it specifically.

S. Elderi, sp. nov. Modice elongata; minus depress glabra; flava, capite viridi macula magna flava

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othorace macula magna obscure viridi, elytris fasciis 2
era antemediana latera haud attingenti prope latera
trorsum producta, altera postmediana integra ad latera
rorsum producta) parte apicali quinta et sutura a fascia
temediana retrorsum cyaneo-nigris, scutello cyaneo, pro-
rno ad basin metasterni et abdominis maculis nonnullis
ennis pedibusque cyaneis; capite æquali sat fortiter
nctulato; prothorace quam longiori (et postice quam
ice) paullo plus quam tertia parte latiori, sat fortiter vix
bre (in medio paullo minus crebre minus fortiter) punctul-
, antice leviter sinuatim emarginato, postice vix bisinuato,
eribus leviter arcuatis, angulis anticis subacutis posticis
te rectis; elytris punctulato-striatis, basi subrectis, apice
gulatim fortiter trispinosis, lateribus postice haud dent-
latis, interstitiis sparsim fortius punctulatis antice sub-
nis postice convexis, corpore subtus sparsim leviter
osterno medio magis fortiter) punctulato. Long., $5\frac{1}{2}$ l.;
, $1\frac{4}{5}$ l.

lark mark on the prothorax occupies the greater part of
ace. Its shape may be roughly described as resembling
the bust of a human figure with the head and the arms
d, the neck reaching to the front margin of the segment.
t, on each elytron, of the antemedian fascia bears a re-
le resemblance to the shape of a boot standing on (but
e reaching) the lateral margin.

narkings and colours of the undersurface are scarcely dis-
able from those of *S. octospilota*, Lap. The upper surface,
, is very differently marked from that of *octospilota*, the
form is more elongate and narrow, the head is not longit-
sulcate, the two external (of the three) spines at the
each elytron are long and acute, &c., &c.
ria Desert.

AGRILUS.

leucus, L. & G. Fraser Range.

ELATERIDÆ.

AGRYPNUS.

ersi, Macl. Murchison District.

MONOCREPIDIUS.

lulus, Cand. Fraser Range.

MACROMALOCERA.

aticollis, Blackb. Nilpena, or thereabouts.

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RHIPIDOCERIDÆ.

RHIPIDOCERA.

The collection contains a single female example (take
tinarina) of this genus. I cannot satisfactorily identi
any species known to me, but even if it be of an u
species it would be undesirable to found a new spe
female.

MALACODERMIDÆ.

HELCOGASTER.

A single example was taken at Mount Squires. It
satisfactory condition for determination.

DASYTES.

D. Squiresensis, sp. nov. Minus elongatus; sat den
pubescens; æneus, femorum apice et tibiis rufo-
sat crebre minus fortiter subrugulose punctulatus;
prothoracis basin vix attingentibus. Long., 1
lat., $\frac{3}{5}$—$\frac{7}{10}$ l.

Maris antennis intus leviter serratis, segmento ventra
imo arcuatim emarginato.

Feminæ antennis minus serratis, articulis 6° 8° que
7^us^ 9^us^ que multo angustioribus, segmento ventrali
simplici.

The colour is greenish-brassy; in some examples th
the tarsi and some, or all, of joints 2-4 of the antenna
I do not observe any character inconsistent with a
Dasytes, unless it be that the tarsi are a little stouter
elongate than in most species of the genus. Apart fro
colour, this insect bears a good deal of resemblance to
Fab. Compared with that species, the present one is
less elongate and much more closely and strongly punct
Mount Squires.

D. Helmsi, sp. nov. A præcedente differt statura mult
pedibus antennisque totis nigris, maris segmento
penultimo late subconcavo postice vix emarginato
1—1$\frac{1}{3}$ l.; lat., $\frac{1}{2}$ l. (vix).

This species is extremely like the preceding in minia
the differences specified above seem, I think, inconsisten
being a mere variety.

D. nigricans, Hope. Victoria Spring and Fraser Rang

CLERIDÆ.

ZENITHICOLA.

Z. sosius, Chevr. Murchison District.

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ELEALE.

chei, Spinola. The insect which I believe to be this species, d which I have seen from other localities in Western ustralia, was taken by Mr. Helms at Mount Squires. I not think I can be mistaken in my identification, although de Spinola does not refer to a character that certainly ems worthy of note, viz., the arrangement of the whitish irs on the pro-thorax in the form of a fascia. In all other spects the specimen before me agrees well with the descrip-n. The insect seems to be extremely variable in size, the allest I have seen being less than 3 l. long; the largest 6 l.

NECROBIA.

ves, De Geer. Everard Range.

BOSTRYCHIDÆ.

XYLOPERTHA.

ua, Blackb.? This species was described from a unique ecimen taken near Port Lincoln. The example of *Xylopertha* ken by Mr. Helms at the Barrow Range appears not unlikely be the corresponding female, and the original type a male. hen I described *X. vidua*, I took it to be a female, on count of its not presenting any of the strong sexual aracters that I found in the male of its ally, *X. mystica*; hough it did not either agree satisfactorily with the *female* *X. mystica* in sexual characters. The examination of this ample from the Barrow Range (which agrees perfectly in xual characters with the female of *X. mystica*, but in other aracters seems very near to, if not conspecific with, the type *X. vidua*) suggests a doubt as to the sex of the type of *vidua*. At any rate, it would not be safe to regard this ecimen as distinct specifically without having both sexes of or of *X. vidua*, for examination.

BOSTRYCHUS.

ita, Fabr. Murchison District.

TENEBRIONIDÆ.

HOPATRUM.

eri sp. nov. Modice elongatum; modice convexum; vix idiusculum; piceo-nigrum, labro testaceo, antennis palpis dibusque obscure ferrugineis; setis brevibus fulvis stitum; capite minus lato, cum prothorace sat crebre guloso, lateribus ab oculis antrorsum divergentibus magis ge quam oculi cavernæ longitudo; prothorace quam giori plane (postice quam antice haud plane) duplo latiori,

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nullo modo canaliculato, antice profunde emarginato, fortiter bisinuato, latera versus late deplanato, lat majori ad basin posita, lateribus a basi ad apicem vi atim (juxta apicem magis arcuatim) angustatis, anticis acutis longe ultra oculos productis, posticis sat manifeste retrorsum directis, elytris ad basin qua thoracis basin haud latioribus, crebre subtiliter gra sat fortiter striatis, striis puncturis sat magnis ins interstitiis æqualibus antice sat planis postice levit vexis; tibiis anticis gracilibus. Long., 5 l.; lat., $2\frac{2}{5}$

The distinctive characters of this species seem to be narrow, the clypeus dilating (but only very gently) forward fr eyes for a greater distance than the distance from the front base of the ocular cavity (in most species of *Hopatrum* th of the clypeus are *strongly* dilated from the eye), base thorax not narrower than the base of the elytra, anterio only gently dilated (very much less strongly than in the ean *H. sabulosum*, L.).

Murchison District.

H. longicorne, sp. nov. Ovale; minus convexum; a subnitidum; piceum, antennis pedibusque plus m rufescentibus; setis brevibus fulvis vestitum; capite lato, cum prothorace elytris que sat fortiter sat creb rugulose punctulato, lateribus nullo modo angulatis thorace quam longiori tribus partibus (postice quam circiter dimidio) latiori nullo modo canaliculato, minus fortiter emarginato, postice bisinuato, lateribu explanatis sat arcuatis, latitudine majori paullo pone m posita, angulis anticis vix productis, posticis sat elytris punctulato-striatis, interstitiis planis, humeris ob antennis sat elongatis prothoracis basin attinge Long., $3\frac{3}{5}$ l.; lat., $1\frac{4}{5}$ l.

It appears to me very doubtful whether I am justified proposing a new generic name for this insect which differs *Hopatrum* in its comparatively long antennæ, and in the str of its prothorax. Its antennæ and prothorax are, in fact of a *Cestrinus*. The head differs from the head of both *Hop* and *Cestrinus* by the sides of the clypeus being dilated la only a little beyond the outline of the eyes. The epipleuræ and tarsi are those of a *Hopatrum*. I do not the species can be referred to any of the genera that have described near *Hopatrum*. The anterior emargination c clypeus is very deep.

Fraser Range.

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PLATYDEMA.

nale example of this genus was found at the Barrow
It does not seem to appertain to any described species,
ould not be well to describe it without having seen its

PTEROHELÆUS.

iusculus, Macl.? This species is known to me only by the
cription. The example taken by Mr. Helms at Victoria
ing is smaller than the type (long., $4\frac{4}{5}$ l.), but otherwise
ees with Sir W. Macleay's description.

tus, Pasc. Nilpena, or thereabouts.

HELÆUS.

us, sp. nov. Late ovalis; subnitidus; glaber; niger,
eribus foliaceis vix rufescentibus, corpore subtus pedibus
ennisque brunnescentibus; prothoracis lateribus foliaceis
olete minus crebre granulatis, disco cornu valido conico
ato; elytrorum disco sat crebre sat fortiter punctulato
granulis sat fortibus seriatim instructo, lateribus foliaceis
d punctulatis confuse sat fortiter granulatis, margine
exo verticali obscure ruguloso; subtus elytrorum marg-
ous foliaceis minus crebre obsolete punctulatis. Long.,
—$16\frac{1}{2}$ l.; lat., $9\frac{1}{2}$—$10\frac{1}{2}$ l.

ranules on the elytra are variable; in some examples they
en well-defined rows confused only near the front of the
n others some of these rows are interrupted, in others
confused with granules placed on the interstices, so that
em to be a large number of ill-defined rows. The granules
ow next the suture on either side are very closely placed
, where they form a quasi-costa. This species seems to
e best distinguished by the perfectly vertical wide reflexed
of both prothorax and elytra which is opaque, obscurely
, and almost devoid of any continuous longitudinal
viewed from the side it is seen to be of almost perfectly
dth from the front angles of the prothorax almost to the
the elytra. A study of this external (more or less erect)
of the prothorax and elytra appears to me to yield very
results in the determination of the species of the ex-
difficult group which Sir W. Macleay made the first
of *Helæus*. The present species is also characterised by
e strongly punctulate disc of its elytra in contrast with
unctulate foliaceous margins. In some examples the
entral segment is much more acuminate behind than in
probably this difference is sexual.
possible that this insect is identical with that which Sir
leay regarded as *H. princeps*, Hope, but if so I am con-

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vinced that Sir W. Macleay was mistaken in his ident
it. It is, I think, impossible that Mr. Hope could hav
the species before me as having "six elevated punctur
the disc of each elytron."

Nilpena.

H. debilis, sp. nov. Late ovalis; nitidus; glaber; nig
subtus pedibus antennisque brunnescentibus;
lateribus foliaceis sparsim distincte granulatis,
valido conico armato; elytrorum disco sparsim mi
punctulato et granulis sat fortibus seriatim instr
ibus foliaceis obsoletissime punctulatis confuse
granulatis, margine reflexo verticali vix rugulo
elytrorum marginibus foliaceis minus crebre obsol
latis. Long., 13½ l.; lat., 9 l.

Very like the preceding, but considerably smaller
more nitid, with the puncturation of the elytra man
and less close. The reflexed margin of the prothorax
is evidently less elevated, so that viewed from the s
narrower; moreover that of the prothorax is very
narrower than that of the elytra.

Exact habitat not specified, but from date of capture
from Arkaringa Valley to Everard Range.

H. lubricus, sp. nov. Late ovalis; nitidus; glaber;
abdomine piceo; prothoracis lateribus foliac
punctulatis disco cornu valido compresso armato;
disco minus crebre subtilius punctulato et gran
seriatim instructo, lateribus foliaceis obsoletissi
latis confuse sat fortiter granulatis, margine reflex
inferiori (hoc prothoracis verticali longitudinalite
subtus elytrorum marginibus foliaceis crebre mi
punctulatis. Long., 16 l.; lat., 10½ l.

Apart from colour-differences (which may not be co
species is much more nitid than either of the precedi
its elytra are punctured like those of *H. debilis;* the u
the foliaceous margins (especially of the elytra) are ver
obsoletely punctured than in either of the precedin
reflexed margin of the prothorax is erect, but that of
is inclined outward; looked at from the side, the refle
of the prothorax narrows from the middle, both fo
hindward, and is continuously concave along all its le
that of the elytra is strongly narrowed towards the
appearance is caused by its becoming nearly horizont
and is declivous in such fashion as to be somewhat
the elytra, its lower edge being quite sharply carinifo

Murchison district.

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ens, sp. nov. Late ovalis; opacus; glaber, niger, corpore
ıbtus pedibusque brunnescentibus; prothoracis lateribus
liaceis sparsim minute granulatis disco cornu valido conico
rmato; elytrorum disco confuse minus sparsim punctulato
obsoletissime quadricostato (costa externa quam ceteræ
ulo fortiori et granulis conicis sat validis armata), sutura
rtissime carinata, lateribus foliaceis sat crebre sat fortiter
anulatis, margine reflexo fere verticali; subtus elytrorum
arginibus foliaceis crebre obsolete punctulatis. Long., 14
-15 l.; lat., 9—10 l.

exceptionally opaque species. Viewed from the side, the
d margin of both prothorax and elytra appears vertical and
ttle rugulose, with the lower edge marked by a very strong
ıdinal carina, as in *H. lubricus*. The strong convexity of
c of the elytra and the comparative flatness of their foliac-
argins give this species a distinct appearance; owing to
it be viewed from the side, the upper outline of the re-
ınargin seems almost to bisect the insect, so that the top of
tra seems nearly as high above the said line as the meta-
n is below it; while in all the preceding three species, if
e viewed similarly, the corresponding line seems very much
so that the top of the elytra is much nearer than the
ernum to it. Of previously-described species of this
of *Helæus* (*i.e.*, Section I. of Sir W. Macleay's Revision),
ssus, De Brême, is the only non-nitid species having the
disc minutely and confusedly granulate; in that, however,
iaceous margins of the elytra are marked with large scat-
punctures, whereas in *H. opacus* they are strongly granu-
Although this species was not taken by the Elder Expedi-
seems convenient to describe it here as being a species
Central Australia closely allied to the preceding three.
tral Australia; McDonnell Ranges.

SARAGUS.

arinatus, sp. nov. Brevis; sat parallelus; minus con-
exus; minus nitidus; glaber; capite prothoraceque crebre
inute punctulatis; hoc quam longiori (et postice quam
ntice) fere duplo latiori, a basi antrorsum arcuatim angust-
o, obsolete canaliculato, lateribus late explanatis, marg-
ibus haud reflexis vix incrassatis; elytris obsolete sat
asse nec rugulose (nonnullis exemplis vix manifeste)
unctulatis, acute tricostatis (sutura haud elevata), costis
nge ante apicem abbreviatis, spatio suturali late depresso;
biis anticis ad apicem extus haud dentiformibus. Long.,
l.; lat., $3\frac{1}{8}$ l.

extremely distinct species with a general resemblance to

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S. emarginatus, Guèr., but with the elytra flat be
two carinæ nearest to the suture and the elytra par
S. convexicollis, Macl. (which, however, is a very much
more elongate species).

Everard Range.

HYPAULAX.

H. orcus, Pasc. Fraser Range.

ADELIUM.

A. simplex, sp. nov. Elongatum ; minus nitidum ; sup
subtus nigrum, tibiis apicem versus et tarsis totis
pubescentibus ; capite minus inæquali sat fortiter
nec rugulose punctulato ; prothorace quam lo
tribus partibus (postice quam antice tertia parte)
canaliculato, haud ruguloso, subtiliter vix crebre
et puncturis magnis paucis impresso, antice s
postice leviter emarginato, lateribus sat fortiter
sat explanatis pone medium haud sinuatis, angul
obtusis ; elytris postice modice acuminatis, fortit
striis inæqualiter punctulatis, interstitiis convexis
angulis humeralibus obtusis nec rotundatis, lateri
arcuatis ; antennis filiformibus sat elongatis, articu
sequentes 2 conjuncti sublongiori. Long., $7\frac{3}{5}$ l. ;

An elongate but somewhat robust species, with e
little wider than the prothorax. The regular striat
elytra, their evenly convex interstices and the comparati
inequality of the punctures in the striæ, are somewh
characters. The interstices of the elytral striæ are
only very feebly and sparsely.

In M. Blessig's subdivision of *Adelium* this species
associated with *A. caraboides*, Kirby, &c. ; but it does
to be very near any previously described species.

Victoria Desert.

CHALCOPTERUS.

C. cupripennis, Hope. Fraser Range.

C. eremita, sp. nov. Elongato ovalis ; viridis certo
aureo- vel purpureo-micans, corpore subtus ant
ibusque atris ; sat nitidus ; capite fere æqualiter p
oculis modice approximatis, intus sulco sat angus
atis ; prothorace modice convexo, quam longiori
quam antice) duabus partibus latiori, leviter i
punctulato, lateribus a basi antrorsum arcuatim c
ibus, margine antico leviter concavo, angulis an
productis sat obtusis posticis (superne visis) obtus
modice convexis, seriatim punctulatis, puncturis i

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crebris sat subtilibus, interstitiis distincte sat crebre ctulatis; prosterno inter coxas sulcato; metasterno in lio sparsim subtiliter, ad latera et in episternis sat obsolete, ctulato; abdomine subtilius minus crebre punctulato, fortiter (præsertim latera versus) longitudinaliter strigato; ennis elongatis, articulis ultimis leviter incrassatis; oribus anticis antice sparsim subtiliter punctulatis; tarsn posticorum anticulo basali quam ceteri conjuncti vix viori. Long., 5 l.; lat., $2\frac{3}{5}$ l.

olour of the upper surface is somewhat uniform, but om different points of view, in some lights appearing a n, in others coppery, in others a mixture of the two, the most examples being more or less golden. Viewed from the upper outline appears evenly and only slightly arched at as in *C. fervens*, Germ., not strongly convex with the ts greatest height near the front of the elytra, as it is in *ipennis*, Hope). The puncturation of the upper surface like that of *C. fervens*; it differs from that of *C. cupri*by the stronger and less close seriate punctures of the The eyes are much more approximate than in either of ve-named species, and are margined within by a wellout narrow sulcus.

pecies appears widely distributed in W. Australia, and mples I have seen vary little except in size, and in some little more elongate than others. The largest example I n is $6\frac{1}{4}$ l. long.

ustralia.

ricki, sp. nov. Elongato-ovalis; modice nitidus; capite thoraceque cyaneo-viridibus, elytris obscure violaceis, corpe subtus cyaneo, antennis palpis pedibusque nigris; capite rsim subtiliter punctulato, oculis modice approximatis, us sulco sat angusto marginatis; prothorace sat convexo, m longiori duabus partibus (postice quam antice etiam gis) latiori, vix manifeste punctulato, lateribus a basi rorsum (superne visis) sat fortiter minus arcuatim congentibus, margine antico vix concavo, angulis anticis usis nullo modo productis posticis (superne visis) obtusis; tris modice convexis, seriatim punctulatis, puncturis in ebus sat remotis sat fortibus, interstitiis vix manifeste ctulatis; prosterno medio inter coxas et antrorsum ad rginem anticum sulcato; corpore subtus fere lævi; ennis elongatis, articulis ultimis vix incrassatis; femors anticis vix manifeste punctulatis; tarsorum posticorum iculo basali quam ceteri conjuncti sat breviori. Long., ; lat., 3 l.

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Resembles *C. eremita* in shape and in the structure
eyes, but differs widely from it in other respects. T
margin of the prothorax is exceptionally strongly round
although the true margin is not quite so bent down (it is
than in *C. eremita)* as to be quite invisible from above, its
curve is not apparent when the segment is viewed from a
W. Australia; taken by E. Meyrick, Esq.

N.B.—A somewhat larger example (long., $6\frac{3}{4}$ l.), more att
behind, and having the puncturation of the underside a li
obsolete, and the colour a little more obscure, is probably th
sex of this species. It was taken on the Elder Exped
Mr. Helms, in the Victoria Desert. I have founded this
tion on the example taken by Mr. Meyrick because I had
applied to it and used the name *C. Meyricki*, although no
tion has yet been published.

MORDELLIDÆ.

MORDELLA.

M. exilis, Germ. ? Several specimens of the insect which
to be this species were captured by Mr. Helms at the
Range. I believe *M. exilis* to be very variable and
distributed, but it is possible that some of the form
I refer to it may prove to be good species. The ex
from the Fraser Range are identical *inter se*, and are
and differently coloured from the type. It will per
advisable to give them a name even as a variety of
This form might be characterised as follows:—

Var. ? *obscurior*. Quam exemplum typicum major (lon
$2\frac{1}{3}$ l.), supra tota nigro-brunneo-pubescens.

I take this opportunity of characterising another insect
I hesitate to separate from *M. exilis* specifically, althoug
casual glance it looks very distinct; but I have seen spe
that seem more or less intermediate.

Var. ? *rufimanus*. Quam exemplum typicum major (long
2 l.); supra læte pallide brunneo-pubescens, certo a
aurantiaco-micans; subtus argentea, certo adspectu
tiaco-micans; capite antice femoribus anterioribus 4 e
anticis rufis. Hab., S. Australia (Port Lincoln).

MELOIDÆ.

ZONITIS.

Z. Helmsi, sp. nov. Fusca, antennis tibiisque obscuric
capite elongato, crebre rugulose sat crasse punctulato,
narum articulo 3° quam 2^us^ triplo longiori; pro
sparsim minus fortiter punctulato; elytris pubesce
crebre minus fortiter sat crasse punctulatis. Long
lat., 1 l.

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antennæ are slightly more than half the length of the body (joint 1 about half as long as the space between the wide, 2 very short, the rest not differing much *inter se* in . The head is a little longer than it is wide across the nd about as long as the basal four joints of the antennæ r; the labrum a trifle longer than the clypeus, sulcate he middle, its front part clothed with short hairs. The ax is slightly shorter than the head, about as long as wide sual glance, longer), about as wide as the head, its sides l in their hind (and converging forward in their front) half, ly impressed on the disc, and deeply transversely near the In a certain light a faint luteous vitta seems to run down ytron. The tibiæ are straight. The hind body is too much ed for accurate description, but seems to be that of a male. much like any previously-described species; perhaps structurally to *Z. bipartita*, Fairm.
chison district.

CURCULIONIDÆ.

Brachyderini.

EVAS.

rardensis, sp. nov. Nigra; squamis albis crassis sat dense stita; rostro sat crasso, basi capite haud angustiori, trorsum angustato, supra carinis flexuosis circiter 6 unito; antennis squamosis; prothorace sat cylindrico, am latiori vix longiori, crebre tuberculato-ruguloso; ytris postice divaricatis acuminatis, leviter striatis, striis t crasse punctulatis, interstitiis vix convexis confertim anulatis (exemplorum haud abrasorum sub squamas abtis), humeris breviter acutis, lateribus arcuatis. Long., $\frac{1}{2}$—5 l.; lat., $1\frac{1}{5}$—$1\frac{3}{5}$ l.

y distinct from the previously described species of the by its black colour and close vestiture (apparently very rubbed-off) of coarse white scales; also by the peculiar re of its rostrum.

rard Range.

ssirostris, Pasc.? The example to which I apply this name omes too near Mr. Pascoe's description to be justifiably reated as a new species Mr. Pascoe, however, says that the rothorax in *crassirostris* is longer than wide. In the insect efore me the prothorax appears so to a casual glance, but by areful measurement it is found to be, if anything, wider than ong. The elytra are rather thickly clothed with very short nconspicuous curved setæ, which Mr. Pascoe does not mention in describing his insect, although in the description of

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another *Evas (acuminata)* published at the sam
mentions the presence of three rows of such setæ on t
West of Fraser Range.

OTIORHYNCHINI.

PROXYRODES, gen. nov.

Rostrum crassum quam caput haud longius; scrobes
abbreviatæ, supra sat approximatæ; oculi subr
antennæ longæ graciles, scapo arcuato prothor
attingentis, funiculo 7-articulato; prothorax transv
apiceque subtruncatus, lateribus arcuatis; scutell
cum; elytra quam prothorax multo latiora; pede
femora abrupte clavata et subtus dente acuto arma
uli postici aperti; tarsorum articulus secundus min
unguiculi liberi; metasternum minus breve; abdo
menta basalia 2 æqualia, 3° 4° que conjunctis qua
longioribus, sutura prima fere recta; processus in
sat latus.

The dentate femora of this genus distinguishes it fr
Australian allies except *Proxyrus*, from which it
antennæ, longer metasternum, &c., render it very distin

P. maculatus, sp. nov. Niger; squamis nigricantibu
nullis griseis intermixtis vestitus (his griseis caput
corpus subtus tota tegentibus, in prothorace
positis, et in elytris limbum basin lateraque fimbri
maculas parvas numerosas quadratas in disco posi
antibus); rostro supra subtiliter 3-carinato, ca
ternis antice divergentibus scrobes intus defi
antennarum funiculi articulis basalibus 2 elongatis
2^{us} vix longiori, ceteris inter se subæqualibus sat
3° 4° que conjunctis quam 2^{us} fere brevioribus, cl
articuli præcedentes 3 conjuncti vix breviori; p
transverso, antice truncato parum angustato,
leviter bisinuata, lateribus modice arcuatis, anguli
(superne visis) acutis extrorsum directis; elytris
erectis pallidis minus brevibus minus sparsim
punctulato-striatis, interstitiis sat planis, bas
bisinuata, humeris leviter extrorsum rotundato-p
Long., 2—$2\frac{2}{5}$ l.; lat., $\frac{7}{10}$—$\frac{4}{5}$ l.

Everard Range.

IDASPORA.

I. terrea, Pasc.? An insect taken on the Fraser Range is
I think, conspecific with the South Australian
which I have doubtfully attributed this name, and c
which a note of mine was published in Proc. L
N.S.W., 1892, p. 118.

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all a proportion of the Australian *Curculionidæ* have
cribed, that it is a very difficult, and perhaps not alto-
very desirable, thing to deal with small collections, such
f the Elder Expedition, of isolated new species of that
The difficulty is increased by the considerable amount
sfactory work that has been already done by Mr. Pascoe,
nera are most perplexing, being generally characterised
a few words, mentioning a distinction from some other
with an amount of detail that runs to the opposite
Thus in the case of most of Mr. Pascoe's *Leptopsid*
he comparative length and width of every joint in the
is made a generic character, with the result that it is
om one can say of any species (unless it be the typical
he genus) that it thoroughly agrees with the characters
enus named by Mr. Pascoe. Until a great deal more
been done with species, it appears to me that minute
generic characters is rather to be avoided, and that so
heir structural characters are sufficiently detailed in the
descriptions, species are for the present best dealt with
grouped in genera whose assigned characters are few,
istakeably salient.

g the characters that have been most relied on as
in the Australian *Leptopsini* are those founded upon
cture of the claws, which assume four different forms
amed genera—*(a)* two equal free claws to each tarsus,
equal soldered claws, *(c)* two unequal claws, *(d)* a
aw to each tarsus. I may remark that my collec-
tains species having claws of still another type, viz.,
s on the front tarsi, and only one on each of the hinder
further that these different structures seem to pass so
y from one to the other in some intermediate species,
nnot resist some doubt as to their value, or at any rate
ether they will be very easily made use of when a large
of species have been described. All the four claw-
s enumerated above are represented in the *Leptopsini*
lder Expedition.

characters that have been relied upon as generic in the
ni of Australia are found in the corbels of the hind
e length of the antennal scape, the form of the eye, and
ence or absence of a scutellum, and apart from these
rs one or two genera have been formed on exceptional
ties in other parts of the body.

hese latter characters seem to be of real value, and to
to be regarded as truly generic, and I am of opinion that
present it is better to rely upon them chiefly for the

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generic distribution of species. To add such trivial as Mr. Pascoe has done surely confuses instead of as would involve the creation of new and unstable bewildering multitude.

With these preliminary remarks I proceed to enu *Leptopsini* of the Elder Expedition.

ESSOLITHNA.

The essential characters of this genus, which are distinguish it from all other described genera of *Leptopsini*, are as follows: anterior coxæ contiguous, open, eyes more or less rounded, a single claw on The following species presents all these characters, bu agree with Mr. Pascoe's diagnosis of *Essolithna* in some of the many minor characters attributed to Probably Mr. Pascoe would make it the type of a allied to *Essolithna*. I, however, prefer to call it *Esso*

E. seriata, sp. nov. Ovalis sat convexa; nigra antenni ineis; squamis nigris et nonnullis aureis dense in prothorace vittas 4 irregulares formantibus et in striis seriatim maculatim dispositis; setis curvatis instructa; rostro brevi, antrorsum sul capite sulco minus perspicuo diviso, postice long sat subtiliter canaliculato, parte antica dimidi atram glabram retrorsum angulatam (ut in gen. exemplis) formanti; antennis elytra vix attinge robustis, pilosis, scapo oculum vix superanti, funic inter se haud multo inæqualibus nullis transver que quam ceteri paullo longioribus, clava qu præcedentes 2 sublongiori; scrobibus profundis p margine inferiori deflexo; oculis late ovalibus i angustatis minus subtiliter granulatis; prothorace antice paullo angustato, tuberculis parvis umbili obsito, subtiliter canaliculato, lateribus fortiter lobis ocularibus angulatis ciliatis; scutello nu prothorace fere dimidio latioribus plus quam du ibus, punctulato-striatis, interstitiis sat planis, ba tis, humeris rotundatis; femoribus prope apice pallidis annulatis; tibiis anticis intus minus per ticulatis; segmentis ventralibus basalibus 2 elon quam 2^us^ manifeste longiori, illo antice lato fer segmentis 3° 4° que conjunctis quam 2^us^ fere sutura prima leviter arcuata. Long., $2\frac{2}{5}$—$3\frac{1}{2}$ l.; la

The arrangement of bright golden scales among black vestiture at once separates this species from all known to me. In a well-marked example the golde

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ws: on the head three vittæ and a sprinkling over the rface, on the prothorax four wide irregular and interrupted the elytra small patches in the striæ (here and there on to the interstices) which give the appearance of is conspicuous golden yellow spots. The ring of pallid golden) scales round the femora near their apex—it is ted on the inner face of the femora—is also a conspicuous r. I have, however, seen a single example in which the cales are nearly wanting (probably through abrasion), and is of an almost uniform deep opaque black colour. This differs from the two previously described of the genus *ia* by the second joint of the funiculus slightly longer first joint,

of Fraser Range; also in my collection from W.A. (exact unspecified).

POLYPHRADES.

ludus, sp. nov. Piceo-niger, pube ochraceo-grisea vestitus; ro supra planato, utrinque ante oculum et supra scrobis tem posticam sulcato, antice lamella atra glabra parva nito, hac retrorsum ut carina abbreviata continua; ennis prothoracis basin vix attingentibus, funiculi culo 1° quam 2^{us} fere duplo longiori, ceteris quam hic sat vioribus inter se sat æqualibus, 3° fere (7° plane) transis; scrobibus retrorsum dilatatis, margine superiori lum medium versus directo, margine inferiori valde exo; oculis ovalibus infra sat angustatis, subtiliter nulatis; prothorace quam longiori duabus partibus tice quam antice vix perspicue) latiori, sat crebre minus se ruguloso, nullo modo canaliculato, lateribus modice ndatis, lobis ocularibus sat prominentibus sat latis; ello haud perspicuo; elytris ad basin quam prothoracis n vix latioribus, mox pone basin valde rotundatoliatis (hic quam ad basin dimidio, quam prothorax fere ia parte, latioribus), hinc ad apicem æqualiter arcuatoustatis, punctulato-striatis, interstitiis sat planis, angulis neralibus dentiformibus; tibiis anticis intus denticulatis; uiculis valde inæqualibus, denticulo interno vix perspicuo; nentis ventralibus ut *Essolithnæ seriatæ*. Long., 3—4 l.; $1\frac{2}{5}$—$1\frac{4}{5}$ l.

pecies differs from all the *Polyphrades* known to me by ture of its claws, which, to a casual glance, appear to be o a single claw on each tarsus, and this appears to be near its base; but on careful examination this dentate ce is seen to be caused by the presence of a very short law closely soldered to its fellow, except at its extreme ich projects as a minute tooth-like point. A further very

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salient character consists in the remarkable rounded dilat
the elytra immediately behind the base, causing the elytr
suddenly swollen out (at a distance from the base equal t
a quarter of their whole length) to a very much greate
than their width at any other part. This elytral structur
exaggerated in the small examples, which I take to be mal
in the larger ones.

Everard Range.

P. satelles, Blackb.? Among the *Curculionidæ* of th
Expedition are a number of large examples (from the
Range, and places east of it) of *Polyphrades*, all of them
abraded as to be unsuitable for description even if rep
tives of an undescribed species. I believe them, how
be *P. satelles*, Blackb., which I characterised from e
taken in S.W. Australia. Mr. Pascoe has long ago (
Soc., 1872) stated that the sexes of *Polyphrades* di
siderably in form, and in the relative proportions
prothorax and elytra; and also that the males are su
considerable *variation* in these respects. I believe th
the case, and that in recognition of its being so, the e
I am discussing (although there is certainly no little v
of form among them) should probably all be rega
conspecific; admitting, nevertheless, that the examin
specimens from which the pubescence had not been
might possibly lead to a different opinion. The speci
no little resemblance to the common South Austra
longipennis, Pasc., but is at once distinguished from i
very evidently coarser sculpture of the prothorax, and
different proportions of the joints in the funiculu
antennæ. In *P. longipennis* the basal two joints are e
the second not much shorter than the first; while jo
are much shorter and subequal *inter se*; in *P. sat*
second joint is not very much more than half as lon
first, and not much longer than the third. I may t
opportunity to remark that when I described *P. s*
called the second joint of the funiculus, as compared
third, "vix longior," and that this phrase is scarcely
and represents the disparity between the joints as l
it really is, as the second joint is *distinctly* (thou
much) longer than the third.

P. rugulosus, sp. nov. Piceus, squamis brunneo-fuscis co
vestitus; rostro 5-carinato, antice lamella atra
munito; antennis prothoracis basin vix atting
funiculo ut *P. tumiduli*; scrobibus oculisque ut *P. t*
sed oculis vix tam subtiliter granulatis; prothorac
longiori quarta parte (postice quam antice parum pe

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tiori, crasse vix profunde vermiculato-ruguloso, nullo odo canaliculato, lateribus leviter arcuatis, lobis ocularibus tissimis sat prominulis; scutello minuto; elytris sat ongatis, basi subtruncatis, punctulato-striatis, interstitiis nvexis, humeris obtusis, sutura postice sat fortiter elevata; biis anticis intus denticulatis; unguiculis et segmentis ntralibus ut *Polyphradis* typici. Long., 7 l.; lat., $2\frac{4}{5}$ l.

rge and elongate but typical *Polyphrades;* distinguished uniform fuscous-brown vestiture, its elytral suture strongly d behind, and the very coarse vermiculate sculpture of its rax, which closely resembles the prothoracic sculpture of *s tribulus*, Fab. The posterior declivity of the elytra is perpendicular, and the outline of the elytra, viewed from e, is gently sinuate in its declivous part.
of Fraser Range.

CHERRUS.

onspicuus, sp. nov. Piceo-niger, squamis piceis dense stitus, his nonnullis, albidis nonnullis cupreis variegatis; stro cum capite fortiter sparsim punctulato; illo supra ngitudinaliter leviter impresso vix perspicue carinato, antice mella atra glabra triangulari munito; antennis sat ongatis, scapo oculos longe superantibus, funiculi articulis salibus 2 elongatis inter se fere æqualibus, 3° multo eviori, ceteris quam 3^us^ paullo brevioribus nullo modo transrsis; scrobibus ut *Polyphradis tumiduli*; oculis late ovalus infra angustatis; prothorace (maris) quam longiori tertia rte (postice quam antice dimidio) latiori, crasse profunde t *Leptopis tribuli* subsimiliter sed magis crebre magis pronde) vermiculato-ruguloso, postice linea longitudinali minus rspicue impresso, lateribus sat arcuatis, lobis ocularibus inus validis; scutello punctiformi; elytris (maris) quam othorax haud latioribus, basi conjunctim late leviter narginatis (basi prothoracis basi subæquali), elongato-ovalus, punctulato-striatis, striis 4^a^ 5^a^ que ante medium sat fortr contortis, puncturis in striis sat magnis, interstitiis nvexis, sutura postice haud carinata, angulis humeralibus ute dentiformibus extrorsum directis; tibiis anticis intus lde denticulatis; unguiculis ut *Cherri* typici. Long., 4 l.; t., $1\frac{3}{5}$ l.

coppery scales form some interrupted irregular vittæ on ad and rostrum, and some small ill-defined spots on the rax and elytra; the whitish scales are chiefly on the sides rostrum, head, prothorax, and metasternum, and along the the lateral declivous part of the elytra, form a ring round f the femora, and are somewhat condensed about the apex

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of the tibiæ; the apical part of the elytra is moderatel
declivous (not very nearly perpendicular), and the upp
of the elytra (viewed from the side) is an even curve
the scutellum to the apex there is no *sinuation* in th
No doubt near *C. aureolus*, Pasc., but *inter alia* with
of the antennal funiculus very differently proportioned
W. of Fraser Range.

C. longulus, sp. nov. Elongatus; elytris opacis; p
squamis nigris (dense) et setis pallidis (sparsim)
rostro cum capite crebre subtiliter nec profunde
illo 5-carinato, antice lamella triangulari fere u
punctulata munito; antennis sat elongatis, scapo
longe superantibus, funiculi articulo basali quar
duplo (hoc quam 3^us^ haud multo) longiori, articuli
elongatis inter se subæqualibus, clava elonga
funiculo haud multo validiori; scrobibus ut *P*
tumiduli; prothorace quam longiori quarta part
quam antice vix quinta parte) latiori haud ca
leviter vermiculato-ruguloso (fere ut *Leptopis trib*
sed sculptura minus fortiter impressa), rugulosi
marginem anticum obsoleta, lateribus sat rotund
ocularibus minus validis; scutello punctiform
(maris?) quam prothorax vix latioribus, basi conju
emarginatis, elongato-ovalibus, punctulato-striatis,
æqualibus, puncturis in striis modicis, interstitiis
sutura postice haud carinata, angulis humeralibus
vix acutis; tibiis anticis intus sat fortiter de
unguiculis ut *Cherri* typici. Long., 5 l.; lat., 2 l.

This species has much of the facies of a *Polyphrad*
antennæ are those of a *Cherrus*, the scape being long
impinge upon the prothorax when set back. It is
elongate insect with a prothorax of somewhat globula
ance, and much more nitid than the elytra. The sculpt
prothorax is very much like that of *Leptops tribul*
becomes quite obsolete close to the front margin. The
moderately strongly declivous behind, and the elytr
viewed from the side is a nearly even curve, but i
sinuous close to the apex, owing to the apex itself bei
prominent hindward.

Murchison District.

C. maurulus, sp. nov. Præcedenti affinis sed minus
elytrorum lateribus multo magis rotundatis; s
depressus; colore et vestitu ut *C. longuli*; capite
fere ut *C. longuli* sed rostro minus distincte
lamella antica magis nitida minus fortiter pu

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tennis paullo minus elongatis magis robustis, funiculi
ticulis 3-7 minus elongatis nec plane transversis; pro-
orace paullo magis transverso, crebre leviter (fere obsolete)
anulato; elytris quam prothorax quarta parte latiori.
ng., 5 l.; lat., $2\frac{1}{5}$ l. (vix).

olour and vestiture very like the preceding but *inter alia*
he prothorax considerably narrower than the elytra and
differently sculptured, its sculpture resembling that of
rades longipennis, Pasc. Like the preceding, this species
the general appearance of a *Polyphrades*, but the scape of
ennæ reaching back considerably beyond the eyes places it
rrus. It is of the same sex (male) as the type of
ulus. The outline of its elytra viewed from the side is an
rve.
chison District.

LEPTOPS.

dinatus, sp. nov. Mas. Elongatus; sat angustus; niger,
dumento sordide brunneo (præsertim in capite et in part-
is excavatis) vestitus; rostro supra longitudinaliter con-
vo, 5-carinato, carinis 2° et 4° inter oculos retrorsum pro-
ctis et hic abrupte desinentibus nec gradatim in capitis
perficiem confusis, scrobibus postice latis male deter-
natis; prothorace quam longiori quinta parte (postice
am antice plus quam dimidio) latiori, crasse vermiculato-
guloso, late leviter canaliculato (canalis fundo longitudin-
ter carinato), antice profunde sinuato-emarginato, postice
ncato, lateribus a basi ultra medium æqualiter leviter
arcuatim divergentibus, angulis posticis fere rectis;
tris sat æqaliter cancellato-punctulatis, interstitiis 3° 7°
e tuberculis conicis validis armatis (illo prope basin vix in
berculis fracto), interstitio 5° plus minusve distincte costi-
mi, parte declivi summa tuberculo magno ad suturam
tructo, humeris acutis antrorsum directis; prosterno
tice tuberculo magno antrorsum directo utrinque armato
pone coxas tuberculo mediano bifido instructo; meta-
rni angulis posticis externis prominentibus; segmento
ntrali apicali ad latera sulcato, parte mediana æqualiter
nvexa sparsissime punctulata; elytrorum interstitiis tuber-
latis intermediis retrorsum leviter convergentibus. Long.,
—12 l.; lat., $3\frac{1}{5}$—4 l.

na. Multo latior, elytrorum tuberculis multo minus
lidis, interstitio 5° in medio obsolete tuberculato. Long.,
l.; lat., 6 l.

species may be roughly described as resembling *L. tribulus*,
ut with the intermediate carinæ of the rostrum (*i.e.*, those

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between the middle one and the lateral ones) continu
the head nearly to the level of the hind margin of th
there ending abruptly—as in *L. colossus*, Pasc.—
gradually merging into the general surface of the hea
the level of the front of the eyes), the rostral scrobes
and not clearly defined, and the fifth interstice of eac
the male not at all tuberculate, and at most only
carinate, and in the female appearing as a feeble c
carina tuberculiform only to the extent of being n
broken about the middle of its length into detached p
appear somewhat like very obtuse feebly raised tu
many examples of the male the fifth interstice doe
from the fourth and sixth. Closely compared with
the rostrum is seen to be much stouter, the prothorax
more widely and less definedly canaliculate with t
traversed longitudinally by a carina (which is wanting
the two rows of tubercles next the suture (*i.e.*, on
side of it) gently approximating hindward, the tw
adjoining (on either side) the suture a little in front
less close to each other (although much nearer to each
they would be if they were in the line of the tuber
third interstice), and the sterna very differently sculp
humeral angles of the elytra are acute and direct
while in *tribulus* they are rounded off.

The only other previously described species that thi
to resemble at all closely is *L. Duboulayi*, Pasc. (from
Bay). I have not to my knowledge seen that inse
description of it is almost useless. With unaccounta
Mr. Pascoe founded the species on the female, althou
tions having the male before him. He says that
resembles *tribulus*, but differs by its prothoracic chan
other form (deep in front and wide behind), and th
fifth interstices of the elytra being tuberculate only i
part, neither of which characters fits the present i
factorily (especially if, as Mr. Pascoe implies, they
both sexes). If this insect, moreover, were *Duboula*
impossible that Mr. Pascoe could have compared it w
and not have noticed the difference in the rostral
stoutness of the rostrum, &c.

The tubercles on the elytra are of much the sa
shape as the corresponding tubercles in the same sex
Fraser Range ; appears to be common.

L. raucus, sp. nov. Præcedenti *(L. biordinato)* aff
elytris multo magis crasse sculpturatis (interstit
maris tuberculis distinctis nonnullis armatis, in
4° 6° que vix continuis), forma magis convex

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agis arcuata, latitudine majori ad (vel fere pone) medium osita. Long. (maris), 13 l., (feminæ) 15 l.

s species resembles the preceding in the sculpture of its m; the prothorax is almost similar, but is a little more l and rounded near the front, so that the sides appear y sinuate; the sterna and ventral segments are similar; e general form and the elytral sculpture are so different feel compelled to treat it as more than a variety. In *atus* the elytra are very parallel, and are at their widest tly in front of the middle; while in *raucus* they are dly more oval, and are at their widest *at* the middle in the and slightly *behind* the middle in the female. As regards ulpture of the elytra, in *biordinatus* the non-tuberculate ices are distinctly traceable as fine longitudinal lines, the between them being somewhat feebly cancellate-punc- owing to the presence of series of transverse lines to those which form the interstices; all this sculpture, er, having a feeble and blurred appearance. In *raucus* no udinal interstices are distinctly marked, except the three ulate ones; the spaces between those three (and between ture and the inner one) being occupied by strong irregular erse lines, which in places run right across from the suture middle tuberculate carina, passing in a zigzag fashion en the tubercles of the first row; here and there two of ransverse lines are connected by a short oblique or longit- line, but not by anything like a *continuous* longitudinal The humeral angles are even sharper than in *biordinatus*, none of the examples of either sex before me of *raucus* do bercles of the first row coalesce in front into anything like inuous carina

row Range; also in my own collection from the neighbour- f Eucla.

is, sp. nov. Elongato-ovalis; robustus; niger indumento riseo-brunneo vestitus; rostro supra longitudinaliter con- avo, 5-carinato, carinis 2° et 4° gradatim in capitis super- ciem confusis, scrobibus (fere ut *L. tribuli*, Fab.) sinuatis ene determinatis; prothorace quam longiori quinta parte postice quam antice circiter dimidio) latiori, crassissime ermiculato-ruguloso, late canaliculato (canali antice in fovea agna paulo pone marginem anticum desinente), antice rofunde sinuato-emarginato, lateribus superne visis sat otundatis sed mox ante basin fere parallelis, angulis posticis ectis; elytris striis punctulatis 6 impressis puncturis fere oveiformibus sat crebre nec æqualiter in striis positis, inter- titiis omnibus tuberculis crebris obtusis formatis, tuberculis n interstitiis 3° 5° 7° que quam in ceteris magis elevatis

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(tuberculis in interstitio 3° antice plus minusve
mantibus, in 3° 5° que postice et in 7° toto sat
parum acutis—fere ut *L. tribuli*, sed minus ac
stitio 1° paullo ante apicem fere ut *L. tribuli* tu
magno instructo), humeris breviter acutis antror
is; sternis ut *L. biordinati;* segmento ventrali
latera sulcato, parte mediana sparsissime fortiter
et longitudinaliter sat late sulcato; elytrorum
tertiis inter se parallelis.

Feminæ in elytris tuberculis minoribus magis obtu
12—16 l.; lat., $4\frac{4}{5}$—6 l.

Nilpena; also in my collection from Lake Eyre ba
McDonnell Ranges.

L. areolatus, sp. nov. Elongato-ovalis; robustus;
mento pallide-brunneo vestitus (? in partibus con
capite fere ut *L. gravis* sed rostro supra haud co
thorace fere ut *L. biordinati* sed paullo magis cr
crasse vermiculato-ruguloso, elytris in areolas i
quadratas divisis, his 6-seriatim longitudinalite
interstitio 3° postice tuberculis magnis circiter
5° in medio obtuse obsolete tuberculato, 7° toto
inæqualibus conicis instructo, tuberculis sub
nullis, humeris sat acutis vix antrorsum directis
L. biordinati; segmento ventrali apicali fere u
sed sulco mediano angusto; elytrorum interst
retrorsum leviter convergentibus. Long., 15 l.;

At once distinguishable from most of its allies b
absence of the two approximate tubercles that are f
many species near the summit of the posterior decli
elytra, one on either side of the suture. The tuber
elytra are all somewhat blunt and not very strongly
cept the apical two or three of the third interstice
one of the seventh interstice, and one at the junction
and seventh interstices, which are proportionally abo
as the corresponding tubercles in *L. tribulus* (male).
into which the elytra are divided are sharply cut and
they are many times wider and longer than the inte
limit them; there are about twelve areolæ in the le
front half of the elytra.

Barrow Range; unique.

L. planicollis, sp. nov. Elongato-ovalis; robustus;
mento (exempli typici) fere nullo; capite ut *L.*
prothorace quam longiori fere tertia parte (po
antice fere duplo) latiori, sat crasse vermicula
parte mediana tertia abrupte subcirculariter

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ter concavo, antice profunde emarginato, lateribus sat
iter rotundatis mox ante basin fere parallelis, angulis
icis rectis; elytris obscure 6-seriatim cancellato-punctu-
, interstitio 3° longe ultra medium carinato pone medium
erculis 2 vel 3 permagnis armato, interstitio 7° toto
erculato (tuberculis apicem versus permagnis), interstitiis
ris vix distinctis, parte inter carinas abrupte planata,
neris sat acutis antrorsum directis; sternis abdomineque
L. biordinati; elytrorum interstitiis tertiis retrorsum
ter convergentibus. Long., 12 l.; lat., 4½ l.

not sure of the sex of the type of this remarkable
out believe it to be a male. The species may be at once
shed from all its allies by the perfectly flat median space
rothorax and elytra (viewed from the side the upper out-
ars as a perfectly continuous straight line from the front
othorax to the posterior declivity of the elytra), together
fifth interstice being quite devoid of tubercles, and
distinguished from the fourth and sixth interstices.
not taken by the Elder Expedition, this species is
ly allied in its characters and habitat to the above to be
described here.

ustralia; Eyre Sand-patch.

oris, sp. nov. Valde elongatus; minus convexus; dense
ino-squamosus; rostro fere ut *L. gravis*, sed haud con-
; prothorace quam longiori (et postice quam antice)
ta parte latiori, vermiculato-ruguloso, anguste sat pro-
le canaliculato, paullo pone apicem transversim sulcato,
ce profunde emarginato, postice vix bisinuato, lateribus
er arcuatis, angulis posticis subrectis; elytris punctulato-
tis, puncturis in striis minus crebris, interstitiis sat
, 3° 5° que leviter convexis postice in tuberculis minus
atis fractis, interstitio 7° toto tuberculis parvis instructis,
rstitio 1° (subsuturali) postice tuberculo modico instructo,
eris rotundatis; prosterno antice vix tuberculato pone
s tuberculo bifido instructo; metasterno simplici; seg-
to ventrali apicali æqualiter convexo; elytrorum inter-
is tertiis retrorsum fortiter divergentibus. Long.
-13 l.; lat., 3½—5 l.

uch like any species of *Leptops* previously described, but
g *Hopei*, Schönh., in its vestiture, though of a darker
The comparatively slender antennæ (with the scape ex-
ly long) and legs, together with the elongate form, give
ect less robust than that of most of its congeners. The
of the elytra is much like that of a female *L. tribulus*,
not differ much sexually. From *L. tribulus* this species

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differs by its much less robust and less convex fo
slender antennæ, the smallness of the tubercles in
elytral interstice, the almost complete disappeara
tubercles on the front of the prosternum (which a
pointed forward), its rostrum not at all concave, even
&c. Very fresh examples of this insect have the el
clothed with short thick setæ of a bright golden colou
near the apex.

Nilpena; also in my collection from the McDonnel

L. contrarius, sp. nov. Ovalis; minus elongatus; nige
(exempli typici) vix manifesto; capite prothorac
L. biordinati, sed scrobibus minus dilatatis; elyt
nec profunde cancellato-punctulatis, interstitiis
(vel fere ultra) medium anguste costatis (hi
interstitio 7° toto tuberculis sat parvis instructis
2° paullo ante apicem tuberculum modicum fere
vix acutis haud antrorsum directis; prost
utrinque tuberculo acuto haud antrorsum dire
coxas tuberculo mediano bifido armato; metast
posticis externis vix tumidulis; segmento ven
sat crebre punctulato, utrinque impresso. Long
$4\frac{1}{2}$ l.

I am not sure of the sex of the specimen on w
scription is founded, but believe it to be female. The
the head and rostrum (the second and fourth ca
rostrum ending abruptly between the eyes, the scr
panded as in *L. biordinatus*, &c.) in itself distinguish
from all the preceding species.

Barrier Range.

L. sulcicollis, sp. nov. Ovalis; piceus, indume
brunneo obscure vestitus; rostro supra planato
carinis 2° et 4° inter oculos retrorsum productis et
desinentibus, carina mediana retrorsum vix
2^{us} 4^{us} que producta, scrobibus postice latis ma
atis; prothorace quam longiori tertia parte (p
antice paullo magis) latiori, fortiter vermicul
late profunde longitudinaliter sulcato (sulci fun
inaliter carinato), antice profunde emarginato, p
cato, lateribus a basi ultra medium sat recte di
angulis posticis rectis; elytris inæqualiter punct
(puncturarum interstitiis rugulosis vix continuis
tuberculatis, tuberculis conicis acutis, tuber
elevato postice utrinque juxta suturam posito, se
tuberculis a basi retrorsum gradatim majorib
intermediæ et externæ tuberculis sat regularibus

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. elytrorum medium continua, illa medium vix super-
humeris sat acutis haud antrorsum productis; pro-
no antice utrinque tuberculo vix antrorsum directo et
coxas tuberculo mediano bifido minus conspicuo,
ato; metasterno utrinque postice subtuberculato; seg-
o ventrali apicali sat æqualiter convexo, subcrebre
tulato; elytrorum seriebus tuberculorum retrorsum
er convergentibus. Long., 6 l.; lat., $2\frac{2}{5}$ l.

ecies is at once distinguishable from all the preceding
Leptops (apart from its diminutive size) by its having,
ibulus, three series of tubercles on each elytron, none of
come simple carinæ near the base. It resembles several
herr's species of *Leptops*, from which it differs *inter alia*
s:—From *dumosus* by the unusually elongate median
the rostrum, and by there not being on each elytron
ceptionally large tubercles placed triangularly; from
us and *spinosus* by its wide, deep, and entire prothoracic
from *spiniger* by the absence of an isolated strong spine
shoulders.
r of South Australia.

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LAND AND FRESH-WATE MOLLUSCA.

By W T. BEDNALL,

Hon. Curator for Conchology, Public Museum, A

[Plate I.]

The number of species collected is seven—one fresh- six land-shells—namely, *Bulinus* (one), *Helix* (four), *Bul* The number of living specimens obtained was fairly l the excessive drought which prevailed throughout the the party is taken into consideration. The species o the only fresh-water-shell taken, occurred in a wate locality at which the party camped at the very comme the Expedition, is one that is widely distributed throu province of South Australia. Of the four *Helices* pr proved to be identical with a species discovered by Pro at Waukaringa some years ago, whose description of it in this paper. Another is *Helix perinflata*, described ago, but still a scarce shell in collections; while the two are new species. The two species of *Bulimi* are known West Australian forms.

HELIX (GALAXIAS) PERINFLATA, *Pfr.*

Pro. Zool. Soc., 1863; *Cox*, Monograph Australian L

(Pl. I, fig. 6.)

This shell was first obtained by Mr. F. G. Waterho MacDonnell Ranges, Central Australia, when acc John Macdougall Stuart in his exploration across the and was described by Pfeiffer in 1863 from the specir procured. It was the prevailing species collected by M and specimens were taken from Mount Illbillee on th Range, westward to the Victoria Desert. Those tak commencement of the journey answer most closely to t tion transferred by Dr. Cox to his Monograph of Shells of Australia. A feature of these particu mens is that some of them are encircled with a somew rufous band just above the periphery, which in very ma examples has a tendency to spread towards the su others again there is not the slightest semblance of th colour, and it is evidently specimens of this type that mitted to Dr. Pfeiffer, as he makes no mention of this

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umber of living and mature shells received by me some ars since some do and some do not exhibit the band.
species varies a great deal, not so much in shape as in ess, and again in coloration. The typical form is solid, far the greater number of the shells obtained during the tion are comparatively thin, and appear to be identical race of this species which has extended southwards from acDonnell Ranges, and of which we have examples col- at Wilson and Carrieton. At one locality a dwarf form ken very much in size and shape like *Helix Flindersi*, and Angas, but without the colour-bands of that species. oration the shell varies considerably; some are a creamy- others have a faint interrupted cloudy-reddish band just the periphery; in others this band becomes a most dis- e marking, while in very many the band extends from the ery to the suture, being darkest in the centre. In the examples the shell is of a uniform greenish hue, with a vitreous appearance.
escription of the animal of *H. perinflata* from MacDonnell —specimens supplied by me, is given by Mr. Hedley in Roy. Soc., Queensland, vol. 6, p. 250, 1889.
species was taken at the following localities :—
he Everard Range on gneissic rock, at an elevation of feet.
nt Illbillee Soakage, Everard Range, under fig-trees, at an on of 2,000 feet. It was here that the dwarf specimens he vitreous appearance were taken in company with one of rmal form.
r Camp 4. Amongst spinifex, on sandy soil with lime p.
enty miles south-east of Camp 4. Under spinifex.
ween Everard and Birksgate Ranges.
r Camp 8. Under fig-trees, on granite rock.
r Camp 10. In debris, under fig-trees, on granite rock.
np 14. Under granite rocks.
ksgate Range. Amongst granite boulders under fig-trees.
rmish Hill. One dead specimen. On porphyrytic rock.
enagh Range.
r large clay-pan. About three miles south of Camp 58, ria Desert.
ween Fraser Range and Yilgarn Goldfield.

Helix (Hadra) fodinalis, *Tate*.

(Pl. I, figs. 1*a*—1*c*.)

ll moderately umbilicated, globosely conic, rather thin and what glossy; surface coarsely- and closely-wrinkled trans-

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versely, somewhat closely and finely incised-striate i
direction.

Whorls four and a half, regularly convex, separated
suture; first two and a half whorls almost smooth, but
granulated and obsoletely wrinkled; the granulations
and the wrinkles increase in strength and closeness
revolution of the spire.

Last whorl somewhat inflated, slightly descending
base convex to the umbilical margin. Umbilicus r
wide with precipitous sides, and towards the inner li
lated.

Aperture oblique, subcircular; peristome subacut
reflected, margins not joined by a callus. Colume
dilated above and slightly extending over the umbilicu

Colour, a pale-brown above, paler beneath, sometim
narrow reddish-brown infuscation in front of the sutur

Animal:—Foot of a chestnut colour with grey rugosi
and short behind; eye-pedicels of a blackish and tent
chesnut colour; collar milk-white.

Dimensions:—Major and minor diameters, 18 mm
mm.; altitude, 14·25 mm.; height of aperture, 10 mm.;
aperture, 9 mm.; diameters of umbilicus, 3 and 3·5 (vi

Affinities and Differences:—The nearest ally of this
H. Nullarborica, mihi, from which it differs in the abse
impressed suture, finer and closer spiral striæ, larger
as well as by coloration and thinness of test; it is
H. Angasiana, Pfeiffer, but has more regularly conv
coarser growth-lines, less-rotund and not so descending
less thickened and reflected peristome. *H. bitaeniata*,
more distant alliance, from which it differs mainly
elevated spire and large umbilicus.

Habitat.—Taken alive in considerable numbers in Ma
beneath blocks of stones on the outcrop of the auriferc
Waukaringa, S. Australia.—*R. Tate*.

Between Victoria Spring and Fraser Range.
specimen.

HELIX (HADRA) EVERARDENSIS, *spec. nov.*

(Pl. I., figs. 3*a*—3*c*.)

Shell umbilicated, globosely conical, somewhat thin, tr
lower whorls closely ribbed by stout irregular and ob
topped costæ, which are coarsest behind the aperture, a
ally fade away on the upper whorls into fine striæ;
lens irregularly pitted throughout; epidermis, pal
much abraded, exposing in places the chalky-white o
substance; encircled immediately above the periph

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te zone about a millimetre broad, and beneath the suture, is impressed, a slightly narrower band of the same hue, tervening space being wider than either band, the spire coiled that the suture throughout its extent divides the band of the upper whorl from the upper band of the ling one, lip of aperture white; whorls four and a half, lly increasing, evenly rounded from the suture to the base, escending in an alignment with the peripheral band; re very oblique, oval-lunate, slightly expanded and re- above, and much so beneath; columella remarkable for e and straight expansion, callus thin, transparent; umbil- rrow, deep, and spiral, abrupt at the margin and steep partially overhung by the dilated columella, and slightly by an internal swelling of the termination of the last

ensions.—Major diameter, 13 mm.; minor, 11·5 mm.; 25 mm.; height and length of aperture, 6·75 mm.; diam. bilicus, 2·5 mm.

species, of which only a single specimen was obtained, smallest member of the subgenus *Hadra* yet known, and very close to one taken during the expedition to Lake n the years 1874-5, of which there are two examples in the Australian Museum collection.

Brazier on seeing the shell noted its very close resemblance *australis*, Menke, but the figure of that species as repro- in Dr. Cox's monograph could not be taken as a guide to ntification.

r Illbillee Soakage, Everard Range, at an elevation of feet.

HELIX (HADRA) ELDERI, *spec. nov.*

(Pl. I., figs. 2*a*—2*c*, 4, 5.)

ll umbilicated, depressedly globose, thin, translucent, ly obliquely striated, more so at the suture; yellowish-white, ving two rufous bands, one, the broader, just above the peri- and the other at the suture, the suture being wound the centre of the lower band of the preceding whorl, and ght margin of the peristome inserted at the lower edge s band; spire elevated, obtuse at the apex. Whorls five, , regularly increasing, the last rounded and inflated at the n the region of the lip, descending slightly in front; aper- blique, roundly lunate, margins approximating, peristome broadly reflected, and very effusely dilated; columellar n narrowly expanded above, and reflected over and lly concealing the umbilicus.

surements.—Major diam., 17 mm.; minor diam., 14 mm.;

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alt., 12 mm.; height and length of aperture, 10 mm.; of umbilicus, 2 mm.

This species is allied in its general characters to ma Australian congeners, and is also ornamented with t bands so peculiar to the most of them, but is specially r for the very effuse dilatation of the outer lip, more pa so where it reaches the base of the shell.

Birksgate Range; under fig-trees amongst granite bo

The following anatomical notes are furnished by Mr. C F.L.S., of the Australian Museum:—

Two shells, containing the snails of *Hadra Elderi*, were examined. The animals were much attenuated evidently been captured during the course of a long aperture was sealed by a tough leathery epiphragm, beh was packed a mass of congealed mucus, the snails havi more than half-a-whorl within the shell. Though the s cated mature individuals, the genital system was shrun condition of a half-grown animal, the consequence p starvation. I was therefore unable to make any ob upon this portion of their anatomy.

The jaw (pl.. I, fig. 4) is rather wide, boomera crossed by seven stout ribs which denticulate the conca the convex margin, ends rounded.

Radula (pl. I., fig. 5) strap-shaped, measuring 6 formula 28 : 12 : 1 : 12 : 28. Rachidian cusp single, ov late, apex projecting beyond the basal margin; bas expanded anteriorly. Immediate laterals larger rachidian, cusps stout ovate, the tips overlapping the b angle of the base expanded. In the remoter laterals grow more slender, and the bases diminish. Transi show a distal accessory cusp budding from the base o cusp; then a proximal cusp appears near the summit o cusp. In the marginals these accessory cusps increase while the teeth diminish in size till the extreme marg trifid blades.

Bulimus dux, *Pfr.*

(Proc. Zool. Soc., p. 24, 1861; *Cox*, Monograph Austra shells, p. 74, pl. xiii., fig. 4.)

A dull whitish shell, nearly two inches in length, wi terior tinged with pale pink. No specimens taken aliv

Fraser Range *(Elder Expedition)*; also King Georg *(Masters)*.

Bulimus melo, *Quoy et Gaimard*

(Voy. d'Astrolabe, Zool., vol. II., p. 110, pl. ix., fig. Monograph Australian Land-shells, p. 74, pl. xiii.,

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somewhat solid inflated shining shell, of which there are
l varieties showing special markings. Specimens taken by
Expedition were dead, but their form is sufficient for pur-
of identification.
tween Victoria Spring and Fraser Range; and Fraser
e (*Elder Expedition*). Also King George's Sound (*Quoy et
ard* and *Masters*), Fremantle (*Bacon*).

BULINUS NEWCOMBI, *Adams and Angas.*

P. Z. S. p., 416, 1863; *Reeve*, Con. Icon., pl. 3, f. 21.)

s species has a much inflated and somewhat produced aper-
It is widely distributed throughout the colony of South
alia; the type specimens are recorded from Mt. Margaret,
al Australia. It occurs in many of the streams flowing
the Flinders Range—in Mannanarie Creek at Wirrabara;
e Rocky River at Laura; in the Nelshaby Reservoir; also
yre Peninsula *(Tate);* and in more southern localities it has
taken in the River Para *(Tate)*, the River Angas at
halbyn, and in the South-East at Penola, Binnum, and
adjacent localities by the late Mr. Tomsett.
per Arkaringa Creek *(Elder Expedition).*

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EXPLANATION TO PLATE I.

Fig.

1*a*-1*c*. Helix fodinalis, *Tate*. Three views slightly enlarged.

2*a*-2*c*. Helix Elderi, *Bednall*. Three views slightly enlarged.

3*a*-3*c*. Helix Everardensis, *Bednall*. Three views slightly enlarg

4. Jaw of Helix Elderi, magnified.

5. Six teeth from different regions of the radula of Heli
their relative positions are indicated by numerals
Highly magnified.

6. Helix perinflata, *Pfeiffer*. Nat. size.

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1ᵇ

1ᶜ

2ª

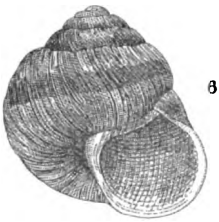
2ᵇ

2ᶜ

3ª

3ᵇ

3ᶜ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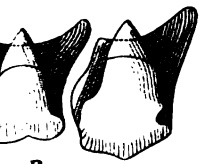
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HUSSEY & GILLINGHAM. LITH.

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TRANSACTIONS

OF THE

...YAL SOCIETY of SOUTH AUSTRALIA.

VOL. XVI., Part II.

[With Six Plates and a Geological Map.]

EDITED BY PROFESSOR RALPH TATE.

ISSUED JUNE, 1893.

...ol. XVI. is reserved for the Scientific Results of the Elder Exploring ...edition, and the continuations of this part will be issued as the reports ...received.

Adelaide:

W. C. RIGBY, 74, KING WILLIAM STREET.

...rcels for transmission to the Royal Society of South ...stralia, from Europe and America, should be addressed ...er W. C. Rigby, care Messrs. Thos. Meadows & Co., 35, Milk Street, Cheapside, London."

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HYMENOPTERA.

By WALTER W. FROGGATT,

Technological Museum, Sydney.

Hymenoptera collected by Mr. R. Helms, of the Elder ring Expedition, having been handed to me to classify, I t the following account of them. In several instances I o pass over several interesting insects that are very likely pecies, as I do not feel justified in describing them without er knowledge of the literature of this much neglected group stralia, than is accessible to me in Sydney; while as regards ts I abstain from dealing with them, as my knowledge of mily is very superficial.

sidering that the collection is the result of nearly nine s gathering in the sandy ridges and ranges of Central alia, I think it very meagre, and remarkable for containing f the typical fossorial wasps of this part of the continent, the Pompilidæ, Sphegidæ, Vespidæ, and larger Eumenidæ ery poorly represented, and the Formicidæ comprises only species from a country which simply swarms with ants in ry seasons.

vever, in all expeditions, even under the best management, ors have many difficulties to contend with, that often t them from making such extensive collections as they wish.

collection contains 57 specimens (including a number of ants on a card as one). The following is a list of specimens r natural order, with the locality as given on the collector's

ICHNEUMONIDÆ.

Cryptus, *sp.*

is one of our commonest species, and has a very wide over the whole of Australia, about Sydney it is parasitic on rvæ of several common moths that crawl upon the grass. unt Squires; one example.

Ophion (three species).

y one species of this genus has been described from Aus- and most likely these, apparently three distinct species are

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new, but it is a very difficult group to work at without material, and one of the specimens has lost its abdomen.

Cootanoorina Creek; one specimen of each species.

EVANIIDÆ.

GASTERUPTION, *sp.*

This appears to be the same species that we find in th of Sydney.

Mount Squires; two specimens.

FORMICIDÆ.

The ants consist of eight different species, none of very remarkable; chief among them is a metallic-gree which there are thirteen specimens from Victoria Desert hairy ground-ant, a small *Myrmica*, a *Formica*, a n small ants gummed on a card, and several others.

MUTILLIDÆ.

MUTILLA FORMICARIA, *Fabr.*

This is one of our largest *Mutilla*, and has a very w over Australia. It was one of the many insects ob Banks, and described in Fabricius' "Systematica Ento This specimen looks as though it had been in spirits, as pubescence and hairs are apparently discoloured; it is larger than those obtained in the vicinity of Sydney.

Victoria Desert, W.A.; one female.

MUTILLA ELDERI, *sp. nov.*

Female. Length, 2 lines.

Black, legs ferruginous, ornamented with a patch hairs upon the abdomen.

Head very round, finely punctured, and covered with black hairs; thorax square in front, swelling outwards prothorax, narrow at metathorax, covered with large punctures, and clothed with scattered white hairs at ferruginous, and very hairy.

Abdomen, first segment narrow, finely punctured, clo scattered white hairs at base; second segment large, o but deeply punctured, clothed on sides with scattered b the centre covered with a dense patch of golden ha occupy the whole length of segment; third, fourth, segments fringed with yellow hairs; sixth segme ferruginous, smooth, and shining.

Fraser Range, West Australia.

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THYNNIDÆ.

THYNNUS TAENIOLATUS, *sp. nov.*

Male. Length, 6 lines.

Head black, round, covered with white hairs on face, finely ose on forehead; thorax and legs black, a pale white band ng the outer margin of mesothorax, which is finely punctured, h an impressed line on either side, a white mark on either of the mesothorax from the base of hindwing to the bottom cutellum; scutellum broad at base, twice the width of apex, ch is margined with a white mark. Wings slightly fuscous. domen black, first segment marked with pale yellow fascia ost divided in two by small black line; second, third, fourth, fifth segments marked with broad yellow fasciæ, which are ndish, and interrupted in centre with small black line, the er edge of these segments margined with whitish yellow. derside of first segment with small wedge-shaped spot, of d, fourth, and fifth marked with club-shaped patch, the apex each margined the lower edges of the segment with dull te.

ne specimen in damaged condition, having lost its antennae.

RHAGIGASTER INTEGER, *Fabr.*

his is a common species, having a very wide distribution over greater part of Southern Australia.
ictoria Desert.

LARRIDÆ.

PISON, *sp.*

Iount Squires.

POMPILIDÆ.

FERREOLA, *sp.*

raser Range.

EUMENIDÆ.

ODYNERUS, *spp.*

hree species of this genus are represented, though it is quite ible that one is only a variety. Many of our Australian *nerus* are described in Saussure's "Supplement to his Mono- ph of the Vespidæ," a work that is not obtainable in any of Australian libraries.
Iount Squires.

ANDRENIDÆ

HALTICUS, *sp.*

Iount Squires; one specimen, a small burrowing bee, probably w species.

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GENUS AND SP. UNCERT.

Victoria Desert; one specimen, a very curious little bee with a broad abdomen.

GENUS AND SP. UNCERT.

Mount Squires; seven specimens of burrowing bee.

APIDÆ.

ANTHOPORA CINGULATA, *Fab.*

Described under the name *Andrena cingulata* in his Syst Entomologica, vol. II., p. 314.

This pretty little banded bee has a very wide range southern parts of Australia, and is not uncommon about Three specimens; Nilpena, Central Australia.

SARAPODA BOMBILIFORMIS, *Smith.*

This fine bee is common about Sydney in the summe flying into the house.

One specimen; Mount Squires.

CROCISA ALBO-MACULATA, *Smith.*

Also recorded from the northern parts of New South and Queensland.

Mount Squires; two specimens.

MEGACHILE BLACKBURNII, *sp. nov.*

Female. Length 8 lines, black, clothed with white hai Tongue and mouth parts ferruginous; head very clos finely punctured; face densely clothed with silvery whit which form a thick brush, drooping down over the mar cheeks behind the eyes and underside of head closely with silvery white hairs; thorax very finely but closely pu covered with a close pile of white hairs on the underside apex above.

Fore legs ferruginous on the upper side of tibiæ, under dark-brown, tarsi produced into bright yellow pollen brus ferruginous, covered with white hairs; middle legs ferrugi upper side of tibiæ and tarsi, dark-brown on underside, with white hairs; tarsi ferruginous, and fringed with whi much longer at base of tarsi.

Abdomen constricted at base of each segment with smooth impressed band, which is more finely puncture upper portion of segment; first segment densely clothed white hairs; second segment with scattered white hairs bright white patch of close short silvery hairs on eith

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egment similarly ornamented with smaller white patches, owing segments shining, lightly fringed on lower margins hite hairs ; underside of abdomen clothed with long white orming a tuft standing out on either side of the last seg-

gs hyaline, upper portion of marginal cell and outer edges wings faintly fuscous, nervures black.
e specimens.
; 5 lines. Black, finely punctured and covered with white liffering from female in having all the legs black and closely l with white hairs, the upper sides of first and second ts of abdomen clothed with long white hairs, and the ing segments with scattered white hairs.
nt Squires ; one specimen.

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GEOLOGY.

By VICTOR STREICH.

Graduate of the Mining Academy, Freiberg; Geolo
Expedition.

Geological Map and Plates II.—V.

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CHAPTER I.

he COUNTRY *between* WARRINA on the Great Northern Rail- *and the* EVERARD RANGE having already been explored and gically made known, I do not consider it necessary to give a led report upon it, though a brief summary of my interpre- n of the geological phenomena may be expected from me.

om WARRINA to COOTANOORINA, about twenty miles distant, urface-features are sandy ridges, trending north and south, nating with clay and loam-flats of considerable area. The s and loams overlie gypsum-bands and indurated gypsiferous , which, when rising above the level of the plain, appear as lat-topped ridges. The wide flats bordering Arkaringa and a Creeks are copiously covered with efflorescent salts. All deposits are of Newer Tertiary and Recent date.

tween Nilpena and Cootanoorina, where the formation ges from Tertiary to Cretaceous, mound-springs occur, which an unlimited supply of good stock-water.

ongside ARKARINGA CREEK, near Cootanoorina, extensive el-beds exist, and the banks of the creek are composed of reous sandstone. These stony downs and gravelly plains nue as far as a line of elevated table-topped hills, which rise t 1,000 or 1,200 feet above sea-level, and on an average feet above the plain; they are distant about 60 miles from rina. The rocks of these table-topped hills comprise jasper- flinty quartzites, sandstone and conglomerate in horizontal ghtly undulating beds; the whole formation is of Cretaceous

About 110 miles west from Warrina the Cretaceous ation is covered by red sands and loams of late Tertiary age, n continue as superficial deposits to near ARCOELLINA WELL, miles from Warrina. Here Palæozoic rocks make their arance, consisting of quartzites, argillaceous slates and sand- s; they rise in Mount Chandler and Chambers Bluff to a derable altitude, extend for a long distance in a S.W. direc- and are highly promising for mineral prospecting. Ten west from Arcoellina, these rocks are concealed beneath loamy plains, but re-appear to the south-east bordering the mass of the Everard Range, as gneiss and other schists.

e EVERARD RANGE, which rises in Mount Illbillie to an tion of 3,010 feet above sea-level, consists entirely of coarse tes apparently intruded among the fore-mentioned Palæozoics; epressed areas, which interrupt the continuity of the range, overed with loam and sand. The granitic rocks are inter- d occasionally, but more so in the southern portion of the e, by dykes of diorite. Generally the granite contains or no mica, and a little only of hornblende.

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CHAPTER II.

From the Everard Range, S. Aust., to the Barr W. Aust.

I. PHYSIOGRAPHY.

The Everard Range extends westward as far as River, a distance of 50 miles reckoned from Mou Several strong creeks discharge themselves along th base of the range; and between its main mass and the ou there are fine alluvial flats covered with a good soil co a clayey mixture of the decomposed felspathic rocks round them. The creeks, winding through tectoni the granite-masses, have considerably enlarged some their erosive action; especially is this the case in the of the valleys. No sooner do these creeks leave t surfaces than they disappear suddenly in the sand, being rendered conspicuous by the abundance of gras age arising from the underground storage of water.

The granite-rocks have, hereabouts, a tendency to w cavernous recesses, in one of which pictorial designs aborigines were discovered.

As Ferdinand River is approached, the outcropping come fewer and less prominent, and when of granit more and more to the form of low turtle-back-shaped

On both sides of Ferdinand Creek low ridges limestone are noticeable, which define the ancient limit of its former area of inundation (see fig. 1, p width of the creek is about 20 yards, but was perfe the time we crossed it. Judging from the fine-graine the absence of large gravel and debris, the descent of not very steep, and the power of the periodical floods i far as erosion or ablation is concerned. The rive therefore low, not exceeding six feet, and are comp sand, without gravel, throughout that depth.

After crossing the Ferdinand, sand-dunes of modera make their appearance; they exhibit no regularity direction, probably because of the irregularity in the the wind, which is here influenced and broken by th ing hills.

The general surface-feature between Everard Range 4 is that of large alluvial sandy plains, the sand res the weathering of the granitic rocks which rise abrupt plain in bold masses and peaks. At their base a vicinity travertine is of constant occurrence.

The elevation of the plain above sea-level is at the about 1,800 feet, as determined by barometric observ

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ıp 4 1,575 feet, as determined by hypsometric observa-

ı Camp 4 Messrs. Lindsay and Helms made a flying-trip
s the south for about 50 miles. From the nature of the
ens collected by Mr. Helms from actual outcrops, and from
ertained topographical configuration, the country in this
ın seems to change very suddenly in proportionately short
es. Starting from Camp 4, the same class of country
ed to ten miles; next, low sandstone-ridges were traversed
niles, after which claypans, with abundance of crystal-
ypsum, were conspicuous features, and here traces of an
mound-spring were observed.
ing Camp 4 in a chiefly south-west direction, the country
d over was of the same character until Camp 12 was
, namely, granite intersected by greenstone-dykes, which
as boulders and bosses rising out of sandy plains now and
ut especially in the vicinity of the granitic rocks low
f travertine occur. In this part of the country the sand-
re more numerous, and the intervening depressions are
with gravel or coarse sand; their general trend is north
th, and their height from 20 to 25 feet.
rds the north the Musgrave Range is visible as a long
bold peaks shadowed in a dim, blue light; to the south
distinct ranges are noticeable.
mean height of the plains is here 1,560 feet, by barometric
, and the granite hills do not exceed 250 feet.
elling from Camp 6 in a southerly direction we passed
w hills having the shape of a marquee (see fig. 3, pl. 2,
l. 4), and trending east and west. They seemed to be the
ation of the ridges of which Chambers Bluff is the most
ent elevation. They consist of quartzites and sandstones,
ve a steep escarpment on the north side of about 50 or
, whilst the southerly slope is less abrupt. From one of
st elevated of these hills, 210 feet above the northern
several parallel lines of similar hills were noticeable to the
and west, some of them presenting steep, scarped fronts,
the north; others were seen afterwards, from the tops of
s Watson and Sir Thomas, extending to the westward,
connect them with the Townsend Ridge, which was reached

ing this range on a north-westerly course, we travelled
andy plains with wind-drifted, sand-dunes, the intervals
n them being thickly wooded with "mulga," and eventu-
eached the outlying portions of the Birksgate Range.
Watson (see fig. 5, pl. 3), the Birksgate Range (see fig.
), and some smaller contiguous elevations consist of granite

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in bold fantastic outlines; they rise very abruptly c
sandy plain, and are very little, or not at all, covered w
tation. At the south-western base of the range, and in
plain-like valleys which are protected from drifting sand,
winding creeks and flood-channels; here herbage and
abundant, and a fair supply of surface-water is obtaina
water-supply could, however, be considerably increased
ming the narrow gullies, and by sinking to the sub
basins which intervene between the hills. The cont
elevated ground occupies a large area, and outlying p
the range occur at considerable distances away from it.

The western, more than the eastern section of the
penetrated by hornblendic rocks; this feature is well-dis
Mount Agnes and Blyth Hill (see fig. 2, pl. 2), the latter
has a back-bone of diorite running right through it. T
Range of Gosse, ill-defined by him, is now proved to be
lying part of the Birksgate Range, and is degraded by
Lindsay to the rank of Blyth Hill.

Mount Watson is a dome-like mass of imposing a
fig. 5, pl. 3), 2,200 feet high, and 726 feet above the sur
plain; Mount Sir Thomas, the highest elevation of the
Range, is 2,535 feet above sea-level, and 680 feet a
plain; Blyth Hill is 2,300 feet above sea-level, and
above the level of the plain, as determined by Mr.
The mean elevation of the plain, deducible from t
figures, is 1,700 feet above the level of the sea.

The soil in the wide valleys of the Birksgate Ran
rich loamy nature, and principally overlies travertine
them drift sand, clothed with a luxuriant growth of p
grass, is prevalent.

Geologically and physiographically the stretch of coun
ends in Mount Agnes is a moderately elevated granitic
roughly parallel with the Musgrave and Macdonnell Ra
is largely covered with alluvial deposits, which allow
summits of the axis of elevation to be visible. Two
masses are especially prominent; the western one is con
the Birksgate Range and its spurs, the eastern on
Everard Range and its numerous outliers; the
probably connected with the Musgrave Range to the no

From Camp 24 the elevation of the spinifex-plain
westward to the base of Skirmish Hill, where on Moses C
depression reaches its minimum of 1,335 feet above
as determined by the hypsometer, representing a fall of a
feet in from 40 to 50 miles.

Skirmish Hill is a somewhat isolated eminence, 580 f
the plain at its eastern base. Though it is apparently c

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e adjacent Tomkinson Range to the north, it consists of a itic rock. Moses Creek, which debouches on the eastern as a very short course. It is here we found a tree which cessively been blazed by the explorers Gosse, J. Forrest, lls.

bout 50 miles from Skirmish Hill the Cavenagh Range ched. The intervening country was of the most desolate nce. Travertine and sand-dunes abound, interrupted only low granitic ridge, much intersected by quartz-dykes. In anitic ridge occurs a rock-hole of most peculiar shape, ielded us several hundred gallons of water. It is in the a narrow channel about two feet wide and about seven or et long, sloping to the west, then extending easterly into ntal chamber some six feet wide. Close to this rock-hole under some sheltering rocks an abundance of flint- and ony-chips, apparently the refuse from the manufacture of nplements. Intermingling with these were marsupial- o that the whole constitutes a veritable "kitchen-midden." accumulations I had noticed at Camp 20, which was also big waterhole, and at Camp 23, in the Barrow Range.

Cavenagh Range, which rises in Mount Cooper to 2,175 ve sea-level, is composed of plutonic and trappean rocks; erspersed wide valleys are well-grassed, and each is ly traversed by a creek. E. Giles records,* during his five days' halt in this neighbourhood in the month of er, the daily passage of an earthquake-wave at about 3 ccompanied by "the sounds of smashing and falling of urled from their native eminences, rumbling and crushing e glen below," coincident with which on one occasion was rary interruption to the flow of water from a spring.

very compact diorites of the higher part of the range are red into immense boulder-like masses and bosses, the of which are sometimes poised on top of one another in a traordinary manner. It is therefore highly probable that these poised-blocks, expanding under the influence of the un of a Central Australian summer, do lose their equili- and, tumbling down, cause a regular mountain-slip, which r some time block the flow of a weak-running rivulet. The ence in time of the daily occurrence of the so-called earth- hock with that of the most intense heat lends support to lanation of the cause of the phenomenon and its periodic nce. Moreover, with the view to the fullest investigation e to me, I erected a kind of seismograph, after the plan of

* Geographic Travels in Central Australia, p. 132.

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Mallet, but not the least indication of a terrestrial w
experienced.

Between the Cavenagh and Barrow Ranges, a distanc
miles, the surface features are low sand-ridges, alternati
travertine deposits. The Barrow Range is constitute
parallel series of granite hills, having a north and south
at least in its southern section, which alone was visite
At its southern end the range attains its highest eleva
Mount Squires, of 2,270 feet above sea-level. It consists
of semiporhyritic rocks, and the much-broken country gi
to several creeks, which water alluvial flats carrying a rich
of herbage and other vegetation. South from Mount Squ
low ridges of sandstone, which are connected towards th
with Townsend Ridge.

The principal axes of elevation in Central Australia
Macdonnell, Musgrave, and Everard Ranges, which repr
series of almost parallel waves or undulations of contempo
origin. The most southerly is the Everard Range, whi
tinued through Mount Agnes and Blyth Hill, is oblique
nected with the Tomkinson Range; the westerly exten
the Musgrave Range. This gigantic upheaval, viewed as
bounded on the south by a belt of sedimentary rocks, p
of Devonian age, which commences with the ranges about
Chandler and Chambers Bluff on the east, and ends in To
Ridge on the west. The country examined by me, which
tween these two boundaries, viz., to the north the Archæan
Central Australian elevation, and to the south the less pro
upheavals of a more recent date, is occupied by the debris
formerly overlying sedimentary formations. Thus the
geology of this section of the journey is of a simple kin
the stratigraphical phemonena in detail are not without i
as may be gathered from the following description.

II.—DESCRIPTIVE GEOLOGY.

A. Sedimentary Rocks.

1. Recent Surface Deposits and Tertiary Rock

From the Everard Range the country slopes gradually
west as far as Ferdinand River, on either side of which,
some distance off, outcrops of *travertine*, with alternating
of *chalcedony* appear (see fig. 4, pl. 3). These strata as sup
deposits are next in importance to the loams and sands,
occupy a very large area of country between Everard and
Ranges. In some localities the limestone is interstratifie
layers of chalcedony and lenticular masses of a tra
blackened by carbonaceous matter; both I regard as a sec

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t resulting from the decomposition of the neighbouring
c and hornblendic rocks.

travertine has frequently a concretionary structure, and
es sand and fragments of the adjacent rocks; sometimes it
s the gravel of the plains to a form of conglomerate. The
ess of the travertine crust varies considerably up to
feet.

lenticular masses of *black travertine* attain to three or four
the longer diameter; if broken, or the pieces be rubbed
r, an empyreumatic odour is given off. An analysis of a
from Ferdinand River gave the following percentage
:—Carbon, 8; calcic carbonate, 38; magnesic carbonate,
ica and oxide of iron, &c., 43. (Similar blackened con-
ary travertine is described by Professor Tate from the
y around the Great Bight in Trans. Roy. Soc. S. Aust.,
p. 115).

cedony as a stratified deposit was found *in situ* at several
especially along the western bank of Ferdinand River,
it forms a stratum of three feet thick beneath travertine.
ris, chalcedony is found in great abundance all over the
nder consideration; not only profusely scattered over the
and forming an integral part of the sands, but abundantly
l over the granitic rocks of this region. It was found as
s 2,700 feet on Mount Sir Thomas, and also on the top of
Illbillie, 3,100 feet.

e siliceous accumulations, as well as the above-mentioned
ous ones, must be regarded as aggregations of siliceous or
ous material, as the case may be, derived from the Tertiary
fundamental Azoic rocks. Their formation may still be
n, especially in and near creek-beds; and no doubt whether
continuous or not, it is contemporaneous with the latest
st abundant superficial deposit—that of the sand.

sand-ridges reach a height of, not exceeding, 60 feet. They
general trend of north and south, though their course is
nally interrupted by granitic outcrops. The material is a
rift-sand, chiefly composed of quartz, either white or
nous; particles of felspar are seldom discernible. The
ess of the sand-cover is very variable; anything like a
could not be seen, unless the wide loamy flats which occur
n, and particularly on the south-east side of the ranges,
be regarded as representing it.

loamy flats are generally watered by creeks, and where
the case *fluviatile gravels* are of frequent occurrence. No
plains, as the term is understood in the northern part of
Australia, exist in this region; but its gravel-beds are of
uviatile origin—the outcome of the erosive force of the

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flooded creeks, and they seldom extend beyond a fe
yards from the mountain-slope from which they have be
River-formed gravels of some extent occur in Moses
Skirmish Hill, and near Fort Mueller in the Cavenagh

Clay-pans are very scarce in this country. A fe
limited area were observed inside Cavenagh Range,
Barrow Range.

2. Palæozoic and Metamorphic Rocks.

This formation constitutes the marquee-shaped hills*
described as running almost parallel with the granit
At Camp 11, where these rocks were first encountered
about 40 miles distant from the nearest granitic uohea
tance which was also approximately ascertained b
Lindsay and Helms and by Mr. Wells on their respect
trips towards the south. There can be no doubt that
are geologically identical with those to south and sou
the Everard Range, and with the Townsend Ridges fur
ward; and it may be safely inferred that the same
composes the Warburton and Sutherland Ranges, alt
rock-specimens from the former, collected by Mr. Li
not exactly the same as, whilst those from the latter, co
Mr. Leech during a flying-trip to Gibson Desert, are
those from the Townsend Ridges.

The hills to the east and south east of the Everard R
sist chiefly of quartzites and sandstones, with which a
ated slate, limestone and gneiss. Specimens of all t
brought back by Mr. Helms from his flying-trip to t
The marquee-hills consist chiefly of apparently unfo
quartzites, but in a creek-bed, which occupies one of t
among them, there occurs a gravel consisting of mica-s
gneiss, and though I did not succeed in finding these
rocks *in situ*, yet there can be no doubt that they are c
parts of the Palæozoic formations in this region. Mo
Turban Hill the relation of the quartzite to the me
rocks is well-defined. The basal part of the section co
metamorphic granite, and the upper part of a quartzi
the intermediate beds show a passage from one to the o
succession from below upwards is as follows:—Granit
ing quartz-pebbles, a silico-feldspathic magma, chan
quartzite, ferruginous quartzite, whitish-coloured quartz

Two small outcrops of primary rocks occur, at ten

* Probably identical with the Tent-Hill formation of Mr.
Brown, Government Geologist of S. Aust. See Report on th
between Port Augusta and Eucla, 1885, p. 2.

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rrow Range, as isolated hills of granulite, which is distinctly
ied with a low angle of dip towards south. I consider this
lite as a part of the formation of the Townsend Ridges, of
it may represent a lower stratum. Pieces of a scaly
zite, containing small laminæ of white mica were picked up
l "wurleys" and camping places of the blacks, who have
ently used them as grinding-stones for seeds, and, although
en *in situ*, yet there is presumptive evidence that this very
ctive rock occurs within the geographic limits of the tribe.
cimen of a similar quartzite was collected by Mr. Leech at
utherland Range, where it, as he informed me, occurs in low
, with a southerly escarpment.
e width of this Palæozoic belt, of which quartzite seems to
e main component, varies probably very much, but from the
ace already adduced, it extends between latitudes 27° 35′
8° 30′, at least 100 miles towards south, whilst at the
send Ridges it does not exceed 30 miles, though it is here
antly covered with Tertiary deposits.

B. Eruptive Rocks.

Plutonic Rocks.—*Granite* of a truly eruptive character is the
prevalent member of this class. At all places of its occurrence
sents on the surface a spheroid or ellipsoid outline, and ex-
internally a concentric structure. Large cuboidal masses of
abundantly scattered over the granite hills, their shape being
sult of cleavage in three directions almost perpendicular to
other. The Everard and Birksgate Ranges consist almost
ly of eruptive granite, as also the main mass of Barrow
e. However, outcrops of granite were observed which
sed a somewhat metamorphic character; but these were
ally as outliers of the main ranges, and very probably belong
schistose series overlying the eruptive granite.
e eruptive granite is generally poor or destitute of mica, its
tute being either hornblende or epidote; felspar crystals
revalent, they are generally colourless or milky white, but
a yellowish red when found on the surface.
rite.—As already mentioned, p. 77, the granite is very
ently intersected by dioritic dykes; they prevail in the
ry between Mount Gosse and Barrow Range, and in
nagh Range the hornblendic eruptive rocks reach their
num of development, as these hills are entirely composed of
In the Cavenagh Range there occurs a diorite which has
atified structure, not only petrographic but also architec-
but in spite of this I do not hesitate to pronounce it
ive, as I attribute the parallel position of the pyroxene
als to a kind of macro-fluctuation structure. The dioritic

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intrusions do not appear to have metamorphosed the rocks in the slightest degree, except at one place, where granite was found enclosed between two dykes of whereas the granite exterior to the dykes is of th composition.

Less frequent of occurrence and not largely develope were found the following varieties of eruptive rocks :—

Diabase, intersecting granite and diorite.

Eurite, as ill-defined intrusions in granite.

Syenite is fairly developed in Skirmish Hill and Squires ; it forms a transition between porphyritic sye typical syenite. The outline of the hills of syenite is less than that of the granite hills. The glens and valleys them have every appearance of tectonic, and not erosiv The syenite, as also the granite, carries sometimes veins dote and epidote-rock (epidosite).

Porphyrites in several varieties occur at Skirmish Hill.

2. Volcanic Rocks.—A dark aphanitic rock, forming of Mount Squires, may be referred to under this head ; to have penetrated the diorite. It resembles closely T though I hesitate to name as such, not having exam microscopically.

3. Tuffaceous Rocks.—Surrounding Skirmish Hill, ritic tuffas were found alternately with porphyritic brec claystones ; they resemble closely a claystone (porp occurring at Rochlitz, in Saxony, which carries also sma of lithomarge as a secondary product of decomposition, also the claystone in question.

4. Extra-limital Volcanic Rocks.—Two specimens well-known obsidian bombs, and of the usual shape w lected, one at Birksgate Range and one near Mount No clue could, however, be obtained as to the original si explanation of their wide-spead occurrence.

III.—MINERAL-PROSPECTS.

As the Everard, Tomkinson, Cavenagh, and Barrow consist almost entirely of eruptive, generally granitic, r may be readily understood that they do not warrant a pects for minerals. Moreover, the scarcity of water (w insufficient in quantity for gold-washing on a large scale) almost certain absence of any kind of surface-indications or lode-formations in these mountains are most unfavour cumstances. Furthermore, the extensive cover of sand a which allows only the uppermost and steepest parts of the being seen, is in itself a great drawback to prospecting.

The marquee-shaped hills forming the Palæozoic belt

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ls the Azoic rocks of the main upheavals on the south, may more encouraging prospects. Considering, however, that are of the same age as the hills and ranges to the east of rd Range, it would be superfluous to search them for the us metals until the former, which are more favourably ed, have been proved to be metalliferous.

IV.—SUBTERRANEAN WATER-SUPPLY.

ring our sojourn in this country water was obtainable only open rock-holes. Only on one occasion was there secured a supply by shallow sinking in a creek-bed near Mount on. It must be remembered, however, that all the creeks very short courses, and, debouching on the plains, are t once in the sand; but here the precious fluid may tained by sinking wells. As the ranges are seldom con-us, though of course connected underneath, large subter-n basins serving as receptacles for the surface-water must in the depressed intervals. The denser vegetation and herbage in the wide valleys lend support to my conjecture. more feasible method of obtaining a permanent supply of is, I think, by the construction of dams. The short and o-strong running creeks would allow of strong dams being on a rocky foundation.

endid sites for conserving water by means of excavated are not infrequent; but I do not think water in any ty will be obtained by sinking in the bed-rock.

CHAPTER III.

Barrow Range across the Great Victoria Desert to the Fraser Range.

I. PHYSIOGRAPHY.

s area on this line of traverse may be best described as the westerly part of the Great Australian Mesozoic basin. cting the cover of Tertiary deposits, although so abundant, limited outcrop of metamorphic schist about half-way across sert, the Mesozoic rocks extend from the Townsend Ridges ranges west of Victoria Spring.

country explored represents, as regards contour and l appearance, a very uniform dismal aspect, sand-plains nd-hills are the chief features of this division.

outcrops of Mesozoic rocks are very scanty, but wherever they seemed to belong to a system of terraces, having a l N.W. and S.E. trend, their strata dipping at a low angle

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to the north-east. The southern escarpment is less fr
concealed than the northern one. Though no actual
were observed, yet it is highly probable that Palæozo
underlie this Cretaceous basin.

After leaving Mount Squires, a series of quartzite l
passed, being the continuation of the Townsend Ridge
could be dimly seen towards west. They have steep, al
pendicular slopes, and approximate mostly in shape to t
quee Hills. This formation is distinctly different to th
be mentioned later, which also consists of quartzites a
stones, but the form of these ridges and ranges is mor
Table Hill shape.

After crossing the Townsend Ridge, the country show
next 36 miles nothing but irregular sand-hills, alternat
widespread outcroppings of travertine and chalcedony ro

The height of this stretch is between 1,000 and 1,
above sea-level. A clay-pan (Camp 38) signifies, prob
outer edge of the recent formation overlying the Devoni
Tent Hill formation of the Townsend Ridges, and also t
ning of the Mesozoic basin, because for the next 150 r
country, though different in its surface appearance on a
the more or less abundant cover of drift-sand or grav
shows the same character, viz., quartzite terraces
descending towards south.

Between Camps 47 and 48, being about 150 miles fr
38, Tertiary formation was again met, consisting of
limestone with carbonaceous limestone-enclosures, a
cedony, and a deposit of calcareous clay, apparently the
mound-springs.

On proceeding further, another sandstone terrace
scended, and we entered wide plains with stunted g
hard sandy soil or nodular limestone, but no outcrops of
were met with until between camps 53 and 54, a larg
creek was passed, on the south shore of which Palæo
crops rise in cliffs of moderate height. (See fig. 8, pl. 4

As this was in lat. 29°, and the formation distinctly
towards E.S.E., it might be looked upon as portion of th
Range. Assuming this to be so, it would be a third
wave to the former mentioned Central Australian Arc
heavals, extending as far as long. 124°, and rising o
secondary rocks of this region.

From Camp 54 to Camp 60 (Queen Victoria Spring),
tance of about 120 miles, the most wretched sand-hill co
traversed. There was no outcrop of anything like a
found, but only small travertine deposits.

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the valleys between the sand ridges gravel beds were some- found, but generally only of a coarse sand, more ferrugin- than that composing the sand-hills. These sand-hills, ially N. and N.E. of Queen Victoria Spring, attain sometimes ght of 300 to 350 feet; their trend being not only here, but er the country passed through N.W. S.E.

een Victoria Spring is situated on the south-western dary of the drift-sand area of Central Australia. These drifted sand-hills reach their maximum in the sand-hills and east of this spring of royal name, perhaps for the n that as far as there the coastal winds of the Australian are in action, counteracting the prevailing north-east winds e interior, and thus forcing them to drop their burden of causing in this way these immense accumulations spoken of e.

e height of Queen Victoria Spring is 830 feet above sea- though it is not the lowest depression thereabouts. Some iles from Camp 58, a small claypan was crossed, the height nich was, according to the barometer, 700 feet above sea- The spring is situated at the base of these high sand-hills, e middle of a small loamy flat, and occupies a basin some rds in diameter (see fig. 11, pl. 5). Its bottom consists of k-blue clay. It does not deserve the name of a spring, but nply a strong soakage supplied by the drainage of the high bouring sand-hills.

ving left Queen Victoria Spring, the country changed re- ably. Within the next 25 miles we ascended a ridge, ng N.S., consisting of quartzite, slowly rising to a height of feet above sea-level, abundantly covered with a fine brown reous loam or loess and extensive patches of nodular traver- imestone.

a deep valley which was traversed afterwards (between 2 and 63) granite and metamorphic rocks were found ed, and also slates and schists cut through by a multitude of z veins.

ter passing a salt lake between C. 61 and 62 the country rises , and quartzite- and granite-outcroppings are observable. rently another range was traversed, the barometer showing feet, and soon after that the hornblendic schists of the r Range were reached. This range is closely connected to- s N. and N.E. with the heights mentioned above; but as from the east it rises abruptly out of the plains. Its highest tion, called the Peak, is 2,010 feet high, and 765 above the n hut. It is a splendid stock country, with abundance of water.

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Encircled towards south by the Tertiary deposi
Nullabor Plains, and to the north bordered by the Azoic
of the Central Australian upheavals, an area of Mesoz
tion extends apparently as far as long. 123°, at le
region. It is extensively covered with drift sand
recent deposits, and no high elevations exist there
southern precipices of the flat-topped hills being den
surface covers.

As far as it could be observed the dip of the Mesoz
chiefly quartzite, was generally not exceeding 15 degs.
found invariably towards N.N.E.

The height of this area varies between 1,300 and 70
the metamorphic ranges of the south, however, whi
form a barrier towards the coast plains, the height ris
feet, according to aneroid measurements, and falls af
the Fraser Range, according to Mr. Lindsay's o
gradually towards the coast.

Recent Formations.

The sand which covers so largely the area previousl
to is the result of the disintegration of the gritty qua
sandstones of the desert. It is generally loose and w
in places, though it is somewhat consolidated by means
cement, but only on the surface, because if the upper
of a thickness of one or two inches is removed, the loo
again met underneath.

It was here where an interesting occurrence of æoli
could be observed. When this uppermost crust had be
through, the wind had carried away the loose sand, le
and then mushroom-like forms of sand, consisting o
layer of consolidated sand on the top, supported by a c
neck of less-impregnated, and therefore less-compact, sa
times also the cover consisted of a flat pebble (see
iv.). The north-easterly part of these æolian form
more excavated than the other parts, due to the prevai
of the interior.

The colour of the sand is generally reddish-brown, a
I should say, up to 95 per cent. of quartz, the balanc
being lime, as the moderate occurrence of small calca
cretions in the sand may prove that there is some (lim
not visibly present.

These concretions have a cylindrical form, a concentr
structure, and are composed of sand cemented togeth
careous matter. They represent probably infiltra

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ngs of the tubes of decayed roots of trees, burrows of insects other small animals.

Another specimen of æolian action, the only one in force in country is this:—It was observed that sand-hills generally sisted of a white quartz sand of a very uniform grain; whilst one in the valleys between the sand-dunes was found to be d mixed with gravel, this sand having invariably a reddish our, and giving a striking contrast to the red sand-hills. I uld like to explain this fact by supposing the wind acts as a ural air separator, as the white, and therefore pure, quartz of wer specific gravity has been removed easier by the wind than ferruginous red quartz, which is of course of higher specific vity.

The shape of the sand-hills is invariably the same as given in 10, pl. iv. The north-eastern slope is convex, gradually ng; whilst the south-western one avers to the prevalent rse of wind, and has a steep precipice of four or five feet in ght, leading to a concave, gradually flattening, incline.

These sand-dunes are really all parallel to each other, and very om found confluent.

The repeated proofs of their instability was observable on unt of gum-trees growing on top of the sand ridges. The s of these trees were often sticking far out on the lee side of dune, entirely exposed and uncovered, whilst the roots on the osite side were buried deeply in the accumulated sand.

Where the sand-dunes are not grown over with vegetation, ndid ripple marks may be noticed, covering especially the nest part of the dunes, and representing in miniature a sys- of æolian formations, as the sand-dunes do *en gros*.

When destitute of vegetation, these sand-dunes can be seen nding sometimes in one long line almost as far as the eye can h. Their height is on an average 60 to 70 feet, except in the hern portion of the great Victorian Desert, where, when roaching the Queen Victoria Spring, sand-hills of 300 feet e traversed. They were there, however, less regular, and e tumbled and confluent.

his, I have reason to believe, is probably due to disturbances he ærial influence, for, as explained in the meteorological s, a climatic boundary exists there, where the dry continental . winds and the coastal winds meet, causing thus a higher fall, which was also able to create a strong soakage on a urable spot such as Queen Victoria Spring has been at one .

his meeting of two winds from opposite directions also cted the accumulation of such immense sand deposits as d there, by causing the continental winds, heavily laden with

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sand, to drop its burden, only allowing the finest particles to be carried further, which gave rise t *loess* deposits bordering the sand deposits to the south

It will be remembered that sandstone ridges were occurring in this portion of our journey, covered wit tions of a fine-grained loam. The only possibility of ex occurrence in this country is by assuming its origin as

As it was ascertained that the sea-winds are a inland as this, and that also a barrier of high rid found there, these facts in themselves make the accu loess easily explicable.

How deep these subærial deposits are could not be According to their levelling tendency it was found mo deposited in the valleys of the bed-rock, where it was found excavated apparently by running waters to four to five feet, showing on the perpendicular faces th the genuine land-loess structure.

The occurrence of such distinct courses of super also points strongly to an uncommonly plentiful r duced, as explained above, by meeting of land and se

Minor features of the surface formation of this sec

Claypans.—They were of moderate extent, and few It will be remembered that when leaving the Devo tion of the Sutherland Ridges, and entering the form has been taken as Mesozoic, claypans were mention ring thereabout. They also were met before and aft the metamorphic rocks described as occurring betwe and Camp 55, and again when leaving the Mesozoi and entering the Palæozoic formation after having Queen Victoria Spring. There they were partly c efflorescent salts, leading to so-called salt-lakes.

Should not the constant occurrence of claypans on boundary of the sedimentary and the metamorphi point to an ascent of subterranean waters, which find the surface along the joints of the bed-rocks.

Even if it should not terminate in an actual egress a perpetual wetness of stratified rocks must lead t disintegration of its particles of physical action, as, f freezing of its interstitial waters, as well as chemica depositing the saline matter by volatilizing, and for deposit of clay, gypsum, and salt, a combination of which all the claypans and salt-lakes consist.

The occurrence of an extinct mound-spring neighbourhood of claypans also points to an effl terranean waters, which was one time even strong penetrate to the surface in a continuous flow.

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have no doubt that the claypans and salt-lakes in the country ribed in this section originated in this way, but I have not slightest intention of pronouncing all the salt-lakes as being of estrial origin.

y far the greatest number of them, and especially those met the granitic high plateaux in Western Australia, are un- otedly of oceanic origin.

ravertine Limestone.—The crust limestone was found in this on as well as in parts of the country already traversed. It found invariably as a kind of a substratum of the sand osits, and was always, if outcropping, an indication of the nity of sedimentary rocks. In the more arid parts of the t desert, that is to say, north of Queen Victoria Spring, the ertine was found compact, showing however, on breaking it a ular structure. In the country south of this spring the stone nodules are found lying about loose, sometimes in big os, They vary in size from a pea to a hen's egg, are uently perfectly spherical, and contain very often a nucleus he underlying bed rocks. These nodules are the result of disintegration of the compact travertine mentioned above.

ravel Plains.—Gravel plains are hereabout of moderate ent only. The gravel consists of the derivative material of chief component of the Mesozoic formation, namely, ferru- us sandstone. The abundance of drift-sand would not permit nything like a widespread plain.

II.—MESOZOIC.

he formation which has been pronounced as Mesozoic consists he following descending order, as observed on the outcropping aces, of—

1) Clay (indurated).
2) Jasper rock.
3) Conglomerate.
4) Quartzite (desert quartzite).
5) Sandstone.

he *Sandstones* and *Quartzites* are the main feature of the nation. They have been already referred to as escarpment- ning wherever they have been found. Lithologically they are great variety, though they are generally close-grained and tain occasionally minute laminæ of mica. They are very gh before decomposition sets in, on account of the felspathic ent they contain, but when found somewhat advanced in mposition the cement is more argillaceous.

asper and *Porcellanised Sandstones* are the next prominent ure in this formation. The gravel and gravel-conglomerate

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found in the plains between the sand-ridges consis
this material, having in this state a thick coating of
matter.

Conglomerates were found on several of the afores
The component pebbles consist of quartz rock and
seemed to be consolidated only in a slight degree, a
seldom encountered cemented together, but lying
covering the base of the rises.

The indurated clay was found covering argillaceou
in one place. The thickness of the stratum, however
be limited as far as the covering sands would perm
nation.

A mudstone occasionally cementing together the r
underlying rocks, and found surrounding the wate
Camp 40 and Camp 44 is of a secondary fresh-wate
and of no intrinsic value.

Well aware of the insufficiency of ranging a se
mentary rocks under a certain geological format
account of the lithological character, as it was done
it must be acknowledged that the lithological and st
features of the Mesozoic (Cretaceous) formation are i
with those of the typical area in Australia. Mo
resemble the Cretaceous deposits met with in the
our journey, which have been proved to be of that a
of fossils.

III—PALÆOZOIC.

Their first occurrence was between Camp 53 an
and the second occasion towards the end of this
journey, when approaching the Fraser Range.

The Palæozoic rocks at the first-named spot forme
high line of hills of a distinct north-east and sout
the dip being 70° to 80° south (see fig. 8, pl. 4).
formation was traversed it was about 25 miles wide,
breadth, however, seemed to be east and west with t
the hills. They consisted of garnetiferous gneiss,
pegmatite, and a breccia of the rubble of these ro
by a siliceous material. The last is of course
formation only.

There is not much to say about the lithological
these rocks, but as regards their occurrence in this l
are of some interest.

As it has been demonstrated by Professor R. Tate
on an exploration into the Bunda Plateau, the ol
deposits of this region rest on a Palæozoic basin
tuberances emerge above the overlying Tertiaries as
seen at Yatala, Fowler's Bay, Pedinga, Ooldea, an

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I should think that the outcrop of metamorphic rocks re- to above represents a continuation of this Palæozoic n which there may have reached it furthest west, and turns down to Point Culver.

cerning these protuberances, which are, according to the man above quoted, granitic, such is not the case in the out- n question, though there is little doubt that this formation country referred to points strongly to a granitic sub- m, which may even outcrop at no great distance from we crossed that formation.

ing it for granted that a line of such formation exists, ex- g from long. 125°, by Boundary Dam to Ooldea, it would there, as has been hinted in a former chapter, another ation of Azoic rocks running almost parallel to the one ed to in Section II., and furthermore this margin of the beds would form a dividing line between two extensive sub- ean basins, the one to the north forming a receptacle for *esozoic* strata, sedimented in it with a fringe of Palæozoic along the northern end, and the southern basin with the oic sediments of the Bunda tableland.

other, and far more extensive, Palæozoic country is repre- ted by the Fraser Range.

graphically speaking, this range is very limited, as the n rising to a perceptible height is not more than 15 miles gth, and about six or eight miles in width, but geologically ends over a wide area, slight undulations being only per- le, but geognostically closely related to the Fraser Range.

s country was entered soon after leaving Camp 62, and the comprising this formation were talcose and micaceous , feldspatic rocks, and chiefly siliceous slates and quartzites. main mass of the Fraser Range consists of hornblendic s indistinctly stratified, and apparently representing an older lying stratum of more distinct stratified siliceous rocks of tlying portions (see fig. 12, pl. 5).

one part of the range, namely, on the way to Simon's Hill the Station Hut, an interesting occurrence of granitic was observable. They are moderately high, with wall-like ndicular sides running parallel to each other for a very long ce. As this granite is inclined to split in rectangular , these dykes have the appearance of ruined walls of s in a street in an ancient town. (See fig. 13, pl. 5).

nerally speaking, as regards eruptive rocks piercing the ose formation of this eastern part of Western Australia, were none met with of any extent or importance. The r Range proper, which I inspected closely, exhibits only rate signs of eruptive disturbances.

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Besides those above-mentioned granitic dykes, pegmatite protrusions were observed there. It r observed here that also in this part of our journey t of obsidian bombs were procured—one in the Gre Desert amongst the sandhills, and one at the Fraser

III.—MINERAL PROSPECTS.

Regarding the mineral prospects of this country, Palæozoic patches are worth consideration here.

Concerning the one between Camps 52 and 54 remembered that this, although a promising piece o at present too far from any civilized place to be mu as a prospecting ground.

On the other hand, the Fraser Range and mineralised surroundings afford the highest possible being vigorously worked by prospectors.

It is situated only about 130 miles from the sea which a well-beaten road, with several wells, is avai whole distance.

The range itself boasts, thanks to the energet which the owners of the place have improved their many good wells, dams, &c., with abundance of spl

This place could be made a kind of a centre, from specting parties could start, and fall back upon if case of want of water, &c.

The country north and north-east of this range is metalliferous character.

Even by the cursory inspection, which was possible owing to our method of exploring, I was ab number of quartz-reefs, which I should have liked more closely. Not only gold will be found in this also other precious metals, as, for instance, silver, highly-promising indications of it.

There are many big blows of manganiferous irons should say, are well worth thoroughly testing.

Considering the fact that this metalliferous area i the north by the Hampton Plains, an excellent pie for pastoral and even agricultural purposes, it is a c mendation towards attempting the opening up of t of the Fraser Range, with a view of developing wealth.

IV.—SUBTERRANEAN WATER-SUPPLY

As has been hinted above, the country between and Victoria Spring seems to be favoured with a mo rainfall, influenced by the relative proximity of addition to this, the favourable physiographical con

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iz., undulating stratification of the metamorphic bed-rocks, ıder this country very promising for obtaining water by wells down to the bed-rocks. A well near Simon's Hill, his was done, proves that this method of obtaining water be crowned with success in other places.

erning the waste track north of Queen Victoria Spring, gh the conditions for subterranean, even artesian, water ourable, on account of its geological and stratigraphical ration, the question arises *cui bono?* should that task, gh promising, be undertaken?

greatest part of this sandy desert will remain for ever is now, an inhospitable, dismal stretch of country.

CHAPTER IV.

he Fraser Range to the Yilgarn and Murchison Goldfields.

PHYSIOGRAPHICAL FEATURES.

large area may be treated as one, on account of its ɔhical uniformity. It comprises an immense high plateau, extends towards the west, far into the settled districts of n Australia, terminating there in a steep escarpment, of the Darling Range forms the most prominent feature. ı geological point of view this same stretch of country is ided into several formations, of which the granitic and the g schistose are the most developed.

height of this vast granitic tableland may be averaged, ng to the barometrical measurements, at from 1,300 to eet. The lower levels of this area are covered with im- saline sheets, which are generally surrounded by large l flats and plains covered by nodular ironstone.

plains are interrupted by bold eruptive granite-masses in ıdstone-capped ridges.

rs or creeks were not met with, and the big salt lakes (as , Seabrock, Moore, Austin), appear to have no outlets, fact accounts for the thick crust of salt with which they vered.

mountains and hills in this portion of the country cannot l to boast of any great height or extension, as with the ion of the moderate outcrops of the elevated granite table- hich represent the main formation of the south and south- n part of West Australia; there are, as already mentioned, w ridges of schistose rocks in the northern portion, which en found in connection with flat-topped sandstone ranges. land surface of the country travelled over may in brief be

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described as follows :—Proceeding from Fraser Ra
westerly direction, towards Lake Lefroy and
Plains, long-stretched ranges of metamorphic rocks
They have a general trend N.E. to S.W., and re
1,200 to 1,500 feet. Towards Lake Lefroy, bet
and Camp 76, wide claypans and salt lakes are
lower levels between the ridges. These salt la
towards the east, and are probably connected wi
salt lakes which were passed *en route* to the Frase
height of the smaller ones above sea-level is on an
900 feet, whilst the bed of Lake Lefroy is 1,000 f
level. All the salt-pans occupy boggy ground, and
difficult to traverse, especially for heavily loaded
of them are bordered by low cliffs, consisting
breccia of a secondary shore-formation.

Lake Lefroy, which has its inlets on the north
southern side bordered by a line of hills of erupti
cover of salt is in places, viz., two to three
but this extreme thickness I consider to be due t
lation of *drift salt*, an occurrence which was obse
dinctly at Lake Deborah, where considerable accu
heaped up on wind-protected places. North and
Lake Lefroy the so-called Hampton Plains
extend in that direction. This is a splend
country, a slightly undulating flat-land, rising o
Monger and the neighbouring hills to a moderate
1,700 feet above sea-level, or some 300 feet abo
level. The hills as well as the whole of the be
Hampton Plains consist of schistose rocks, with an
quartz and ironstone lodes, the whole being trave
there by eruptive, mostly dioritic, dykes.

The soil is hereabout of an excellent quality,
composed of the decomposition-products of the s
tonic rocks of the vicinity,

By travelling from here, Camp 76 (Hunt's Well),
direction towards Yilgarn, an entire change in th
observed after passing the Depôt Hill of Hun
typical Western Australian granite-country was e
first time, *i.e.*, boundless flat country, either of ha
and covered with dense Eucalyptus forests, or
gravels and clay-stones, and in this case covered
vegetation. Through this sand-soil the underlyin
occasionally in large masses, and attains various he
to 400 feet above the plains (which are on an aver
above sea level), thus breaking the monotony of
contour.

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the western edge of the Hampton Plains to the imme-
cinity of Southern Cross, a distance of about 150 miles,
ntry is of this same character, except that in the latter
the lower levels include many salt-covered lake basins
pans. The lowest portion of this depression of 950 feet
a-level was reached at Yilgarn, at the shore of Lake
.

Yilgarn Hills are a low range, their general direction
rth and south, having along their eastern base a chain
akes.

Yilgarn the auriferous schistose formation was entered
nd this by travelling towards N.N.W. was left shortly
r having passed Golden Valley.

leaving the Yilgarn Hills, by proceeding in a N.N.E.
the granite tableland once more appears. The sand
vel plains begin again, with no other break than here and
gh masses of eruptive granite.

kind of country was found continuous (by travelling in a
d N. direction) as far as Mount Kenneth, which means
a distance of 125 miles the character of the country was
e.

e reaching Mount Kenneth and its surrounding heights
rne Flats were traversed—a fine piece of country, fit
agricultural purposes.

t Kenneth is a table-topped sandstone cliff of moderate
but of rather lengthened extent. There are several of
at-topped hills noticeable towards N. and N.E., and also
t, sandstone-capped ranges, one of which was crossed
escending down to the Warne Flats (Camp 97-8).

lling from Camp 101 in a westerly direction schist country
ain entered. Quartz and ferruginous quartz veins are
entiful, and the country has a very promising appearance
prospecting point of view. These schistose rocks strike
S., and the Canning Hills (Mr. Broad's Station) are the
elevation of this formation.

Broad's Station we travelled again north, or nearly so,
country passed through was again sand plains and bold
hills. At Jones's Station the schist country was
again in Mount Magnet, it being the continuation of the
g Hills to the North.

een Jones's and Townsend's Station, which latter was
afterwards (the two places being only some 50 miles
only granitic bed-rocks were met with, whilst to the east
Austin was visible, bordered by low, apparently schistose,
This latter formation was found outcropping again a few
eyond Townsend's Station, and the low ranges composed

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of this formation, still striking N.S., continue as far
Station where they carry the Annean Reef, the first g
covered on the Murchison.

DESCRIPTIVE GEOLOGY.

FUNDAMENTAL ROCK STRUCTURE.—Exclusive of th
superficial deposits, the general geological configura
country may be best described by assuming as fou
massive masses of granite, forming slightly undu
plateaux, which are bordered, one of them to the E.,
the N. and E., by low hills composed of crystalline
rocks. One of these masses, the smaller, extends fr
garn Hills to the east as far as the Depôt Hill of Hunt
77), from which point eastwards the granite is overl
metamorphic rocks, which is probably the case also t
and south. The other granite mass, the larger, e
Yilgarn northwards as far as Townsend Station, a
on the east by a belt of schistose rocks. How far
tends towards the east is not yet known, but if it sh
continuous I should think that slaty rocks *prevail* in
just as the granites do to west of our route, whe
formation, according to Mr. H. P. Woodward,
Geologist in W.A., in his report on this country, and
ing to Rev. W. B. Clarke, in his "Sedimentary Fo
N.S.W.," only occurs in patches.

CAINOZOIC ROCKS.—The following recent formation
in this part of West Australia are:—

Sandy Plains.—These are the chief features of
country, and they consist either of a fine loose sa
frequently, of a hard loamy sand. In the latter cas
rise to splendid vegetation and high timber, whilst
first-mentioned kind is in every sense entirely usel
Murchison District the sand of these plains is found
to such an extent that it can be used as a building
three to five feet under the surface where this recen
is found in layers of five to ten feet in thickness, in
in places by a semi-opaline sinter, and almost inv
chiefly at a shallow depth, it is found to be water-bea

If freshly broken this sandstone is very friable,
quickly by exposure to the air, a circumstance which
presence of a fair amount of calcareous matter besides
sand forming these sand-plains may be taken as th
material of the "Desert Sandstone" which still cover
in the interior. Immense areas also are covered wit
gravel, consisting of ferruginous sandstone and clayst
have a widespread occurrence between the Lake Lef

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ilgarn, and also between Golden Valley and the country Mount Churchman. They occur in belts or patches n the sand-plains, and are often 10 to 20 miles across. On t of the scarcity of vegetation, they represent a very dismal

"*crust limestone*," or travertine, is of comparatively rare nce. It is limited to the beds of watercourses, and is there only in very moderate thickness. In a creek near terhall Mine, at Golden Valley, it was found exposed to a ss of two feet.

Lakes.—All over this portion of the country were tered numerous and extensive, what are generally styled, akes," to which reference must here be made. In a former r I essayed to explain the terrestrial origin of some of the es in or near Mesozoic deposits; but such origin is not ble to the salty claypans of the West Australian high n. There is little doubt that these large flats, covered with cent salts, represent depressions of the granitic upland, ch the saline matter remaining from isolated, and in due of time evaporated, parts of the ocean, has been accumu- As they have no outlet at all, or only one at a very high mark, the saline matter remains, and a proof that this c upland has been raised from below the level of the sea, idespread occurrence of the sandstone cappings of these ic rocks may be adduced.

se wide lake-basins are surrounded either by large clay- r, as it was found in the southern portion of this section, cliffs consisting of a hard silicate of magnesia-rock. This ion signifies most likely ancient deposits of these lakes.

a minor feature, may here be mentioned *deposits of guano* erns and rock-holes of the numerous granite rocks of this y, which have most likely accumulated there through bats allabies using them as shelter.

ESERT SANDSTONE."—As a transition to the older formations ay be regard the sandstone which caps the crystalline hills, ally in the more northern parts of this section. This tion was encountered firstly when descending towards the e Flats, which are bordered also to the east and north by f the same formation. This sandstone overlies directly the e, and is invariably horizontally-bedded; its thickness from about ten to 200 feet on the hills round Mount eth. As the lower portions of this sandstone are more in- to weathering than the upper, these form overhanging oments, with numerous caves at the base of them. Big y-looking quartz-blows in these sandstone deposits occur ently, being only infiltrations of siliceous matter, as they

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are often found in sandstone country, and therefore, no value. Fossils were not found in this formati probably identical with the "desert sandstone" of t Territory of Australia.

Palæozoic or Archæan Rocks.—The main compo crystalline rocks are the hornblendic schists and slate varieties. They immediately overlie the granites, a lain by the feldspathic schists and quartzites of the tion. In this order of superposition they were found by travelling in a north-easterly direction from F where they are well developed, and also eastwards of As components of less importance of the same forma mentioned here talcose and micaceous schists, wh other hand a siliceous ironstone, locally called "j constantly and largely developed in this series. T frequent occurrence in auriferous country. Th occupy also a prominent position amongst the Pala tion. They are mostly of a hard glassy character, w tint; the gritty variety though is also found, especial of Yilgarn. The quartzites and the underlying fel hornblendic schists seem to be comformably strati only in a small degree disturbed from their horizont tion.

Plutonic.—The immense area occupied by granit this formation. Wherever outcropping they bear a eruptive character. Of a dome-like form and of mod say, on an average, about 200 feet, they often sho macro-fluxional structure, the big curves formed b feldspar crystals being strikingly discernible. They a traversed by quartz veins or dykes of a magma differe to the main mass, but these veins, of course, are of n from a prospecting point of view. A puffing up of a peeling off of scales of these granites, which is occurrence, may be due to the action of a sudden cha and frost, a dynamical factor of great importance in Generally these granites are poor in plutonic intrus they occur, they are of a dioritic nature.

Plutonic and trappean rocks other than diorite the country round Lake Lefroy. There diabase porphyry occur. The Parker Hills, on the south sh Lefroy, are at their eastern end composed of the lat and the former form huge dykes in the above-mentio also occasionally they appear rising in bizarre mases, basins of the salt lakes of this country.

The Canning Hills (Mr. Broad's Station) show quent plutonic intrusions, and deposits of detri

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material of considerable extent (porphyry and diabase tuffa) were also found there.

MINERAL PROSPECTS AND WATER SUPPLY.

From the foregoing account of the widespread occurrence of metamorphic rocks it will be readily and rightly concluded that this country is of a *highly promising metalliferous character.* An auriferous area extends from the Fraser Range northwards to the Hampton Plains, and as belts of the same material most probably border the granitic elevation between the Hampton Plains and Yilgarn to the south and north, this same formation will be found to extend as far as the latter country.

The area to N. and N.E. of Lake Lefroy, however, had the most promising appearance to me, and I may safely say that the country round Mount Monger will yet be famous as a goldfield. Northwards again, between Mount Kenneth and the Canning Hills, the same promising signs for the presence of precious metals were observable. It is a spur of the belt of metamorphic rocks extending northwards from Yilgarn. There, as well as further northwards towards the Murchison District, the gold-bearing character of this formation is known, and there is little doubt that it will prove so all along this belt of metamorphic rocks.

In regard to the granitic country, there is no likelihood of minerals or metals being found there, but as these probably represent the hard lower portions of this formation which will, no doubt, be overlaid by softer metamorphic granites forming the transition to the true metamorphic schists of this area, there is, if these be found, a chance of encountering also metalliferous veins in them. Unfortunately the prevalence of the abundant covering of sands and loams encompasses these over-lying softer portions and renders prospecting for them almost impossible.

Water.—The uncertainty, however, of obtaining valuable water-supplies presents a less pleasant outlook. In the northern portion of this section there is a fair amount of water, although sometimes brackish, to be obtained by shallow sinking in the alluvials. The settlers of the north-eastern district have already been successful in this respect, and this will be the only practicable method for that purpose. In the southern portion, however, though having a higher annual rainfall than the northern, the conditions for obtaining water in the alluvial deposits are less favourable, but as there are a number of granite bosses, which afford favourable sites for constructing dams, this method will have to be applied, in addition to sinking wells in the immediate vicinity of these rocks, where water will often be found stored in subterranean receptacles formed by the granites.

In the whole of this section there is, of course, not the slightest chance of obtaining water on the artesian principle.

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CHAPTER V.

LIST OF ROCK AND MINERAL SPECIMENS

I. Specimens characterising the rocks comprising Mount Chandler and vicinity. May 29-31, 1891. (Palæozoic Devonian).

II. Chief rocks of the formation between Cootanoorina and Arcoellina. May 3-25, 1891. (Cretaceous).

III. Specimens of the most prominent recent bed rocks between Warinna and Cootanoorina. May 2-3, 1891.

1A. *Hornblendic granite.* Main mass of Everard Range. June 2, 1891.

1B. *Epidote-diabase.* Forming dykes in Everard Range. June 4, 1891.

1C. *Granite.* Low ranges surrounding the Everard Range. June 3, 1891.

1D. *Travertine-limestone.* Gullies and Watercourses. Everard Range. June 4, 1891.

1E. *Epidote.* Small veins in granite mass of Everard Range. June 3, 1891.

1F. *Diorite.* In huge masses west of main mass of Everard Range. June 6, 1891.

1G. *Diorite* Dykes in granite hills S.W. of Everard Range. June 6, 1892.

1H. *Diorite,* from small veins intruding the lower parts of main mass of Everard Range. June 6, 1891.

1I. *Siliceous sinter.* Gullies and watercourses in Everard Range. June 5, 1891.

1K. *Semi-opaline sinter.* Gullies and watercourses of Everard Range. June 4, 1861.

1L. *Specimen of œolian-eroded surface of granite rock.* Everard Range. June 4, 1891.

IV. *Specimens* collected by Messrs. Lindsay and Helms on *flying-trip* south from Camp 4. June 15, 1891.

(*a*) Within Camp 4 and 12 miles.
(*b*) Within 12 and 30 miles.
(*c*) Within 30 and 50 miles.

2. *Granite, metamorphic.* Rocks and boulders west of Everard Range. June 7, 1891.

3. *Travertine breccia.* Tavertine rubble and quartz cemented by red travertine. Eight miles west of Camp 1. June 7, 1891.

4. *Granite.* Twelve miles west of Camp 1. June 7, 1891.

5. *Travertine-limestone.* Eight miles west of Camp 2, forming banks along Ferdinand Creek. June 8, 1891.

6. *Black travertine* stained with absorbed vegetable matter. June 8, 1891, near Ferdinand Creek.

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7. *Sand* from the Ferdinand Creek. June 8, 1891.
8. *Metamorphic hornblendic rock* (decomposed). Ten miles west of Camp 2. Overlaid by travertine-lime. June 9, 1891.
9A. *Nodular* and *tabular limestone.* Five miles west of Camp 3. Terraces along Ferdinand Creek. June 9, 1891.
9B. *Travertine,* partly replaced by opal-quartz and opal. Near depôt Camp 4. On base of granite rocks. June 10, 1891.
10. *Gneissic granite.* Low hill two miles N.W. of Camp 4. June 10, 1891.
10A. *Granite.* Same locality. June 10, 1891.
10B. *Diorite,* piercing granite. N.W. same locality. June 10, 1891.
11. *Granite* (decomposed). Small hills between Camps 4 and 5. June 18, 1891.
11A. *Diorite.* Same locality as No. 11. June 18, 1891.
11B. *Travertine* (including debris of rocks). Base of small granite hills between Camp *s*4 and 5 June 18, 1891.
12. *Quartz, hornblende, felspar.* Small veins in granite hills between Camps 4 and 5. June 18, 1891.
13. *Lodestone* (lode five feet wide). In granite hills between Camps 4 and 5. June 18, 1891.
14. *Travertine.* In banks running N.S. escarpment E. Between Camps 5 and 6. June 19, 1891.
14A. *Chalcedony.* Embedded in travertine (14). June 17, 1891.
14B. *Travertine,* with absorbed organic matter. Banks between Camps 5 and 6. June 19, 1891,
15. *Diabase.* Intersecting a diorite outcrop. Nine miles west of Camp 6, June 22, 1891.
16. *Guano-incrustation* of rock-holes (bats). Granite rocks near Camp 6. June 22, 1891.
17. *Diorite.* Low hills near Camp 9. June 24, 1891.
17A. *Epidote.* Intersecting low diorite hills near Camp 9. June 24, 1891.
18. *Felspathose grit.* Faulted country near Camp 10. June 29, 1891.
19. *Veinstone.* Five miles east of Camp 11. Low range. June 29, 1891.
20. *Quartzite.* "Coffin" Hills, near Camp 12. June 30, 1891.
21. *Travertine,* as cement of gravel conglomerate. Two miles N.W. from Camp 12. July 2, 1891.
22. *Granite,* with *travertine*-incrustation. Low Granite Range. Camp 14. July 4, 1891.
23. *Gneissic granite.* Birksgate Range and surroundings. July 12, 1891.
24. *Epidote-granite.* Birksgate Range. July 8, 1891.
25. *Quartz-lode.* In Mount Sir Thomas. July 17, 1891.

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25A. *Felspathose rock*, with *quartz-vein*. Low Range. July 4, 1891.
26. *Diorite* (hornblende-rock). Small veins in granit Sir Thomas. July 12, 1891.
27A. *Granite*. Lowest stratum of Turban Hill. Jul
27B. *Granitic rock*, with embedded subangular gra Same hill, second stratum.
27C. *Quartz* pebbles of a conglomerate. Same hill, thi
27D. *Silico-felspathic rock*. Same hill, fourth stratum.
27E. *Ferruginous quartzite*. Same hill, fifth stratum 1891.
27F. *Whitish quartzite*. Turban Hill, top layer. Ju
28. *Argillaceous travertine*. Gullies of Birksgate Ra 12, 1891.
28A. *Gypseous clay*. Gullies of Birksgate Range. Jul
29. *Binary granite* (microcryst. quartz, microcryst. fel back Hill (Mount Gosse?) July 17, 1891.
30. *Travertine*. From Boundary Hill (Mount Gosse) 1891.
31. *Granite*. From Boundary Hill. July 18, 1891.
31A. *Eurite*. From Boundary Hill. July 18, 1891.
32. *Scaly quartzite* (lustre due to minute laminæ Grinding-stone of blacks not found in situ). 1891.
33. *Porphyritic syenite*. Main mass of Skirmish Hill 1891.
33A. *Porphyrite*. Dykes in Skirmish Hill. July 20,
33B. *Porphyrite*. Intrusions in Skirmish Hill. July
34. *Porphyritic tuffa*. Surroundings of Skirmish Hil 1891.
34A. *Porphyry-breccia*. Base of Skirmish Hill. Jul
34B. *Porphyry-claystone*. Base of Skirmish Hill. Jul
35. *Agate*. In porphyry rocks of Skirmish Hill. Jul
35A. *Semi-opal*. From Skirmish Hill. July 20, 189
35B. *Quartz crystals*. Skirmish Hill. July 20, 189
36. *Specimens* of rocks from a *flying trip* towards sou by Mr. L. Wells. July 25, 1891.
37. *Porphyritic diabase* and *quartz* vein intersecting t Western parts of Skirmish Hill. July 26, 18
38. *Diorite*. Main mass of Cavenagh Range. July
39. *Diorite* (bell-rock). Cavenagh Range. July 29,
39A. *Aphanitic diorite*. Cavenagh Range. July 30,
39B. *Quartz-epidosite*. Cavenagh Range. July 30, 1
39C. *Aphanite*. Cavenagh Range. July 30, 1891.
39D. *Felspar*, with specks of *hornblende* (vein formin Cavenagh Range. July 29, 1891.

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39E. *Semi-opal*, with *hornblende* (small veins). July 29, 1891.
39F. *Quartz*, as lode in hornblende rock. Cavenagh Range. July 29, 1891.
40. *Tachylite*. Mount Cooper, Cavenagh Range. July 31, 1891.
41A. *Granulite*. Ten miles east of Camp 33, Barrow Range. August 3, 1891.
41B. *Granulite* (gneissic structure). Ten miles east of Camp 33. August 3, 1891.
42. *Syenite* (semi-porphyritic structure). Main mass of Mount Squires, Barrow Range. August 5, 1891.
42A. *Quartz*, lode in syenite of Mount Squires. August 5, 1891.
43. *Diabase*. Mount Squires, Barrow Range. August 5, 1891.
44. *Ferruginous sandstone*. South-west side of Mount Squires. August 5, 1891.
45. *Specimens* from the *Warburton* Range and *Elder* Creek, D. Lindsay. August 10, 1891.
46. *Specimens* from a *flying trip* in Gibson's Desert, F. W. Leech. August 10, 1891.
47. *Felstone*, from a dyke in Mount Squires. August 26, 1891.
48A. *Syenite*, from Mount Squires. August 29, 1891.
48B. *Porphyry-syenite*, from Mount Squires. August 29, 1891.
48C. *Epidosite*, as lode intersecting 48B. August 29, 1891. Mount Squires.
49. *Felstone-porphyry*. As dykes in Mount Squires. September 1, 1891.
49A. *Quartzose diabase*. South side of Mount Squires. September 1, 1891.
50. *Quartzite*. From Townsend Ridges. September 2, 1891.
50A. *Quartzose grit*. From Townsend Ridges. September 2, 1891.
50B. *Argillaceous sandstone*, with mica lamells. Terraces near Camp 40 (waterhole). September 4, 1891.
50C. *Ferruginous sandstone*. Same locality as No. 50B. September 4, 1891.
50D. *Travertine*. Covering the ferruginous clay sandstone. Same locality. Camp 40. September 4, 1891.
51. *Quartz-pebbles*. As layers in terraces crossed between Camps 40 and 41. September 5, 1891.
51A. *Quartzite*. Ridges between Camps 40 and 41. September 5, 1891.
51B. *Clay* (indurated). Top stratum of ridge between Camps 40 and 41. September 5, 1891.
51C. *Sandstone*, with siliceous cement. Between Camps 40 and 41. D. Lindsay. September 5, 1891.
51D. *Clay*, enclosing minute mica lamells. Ridge between Camp 40 and 41. September 5, 1891.

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52. *Argillaceous cement*, of a quartz-breccia. Between Camps 43 and 44. September 9, 1891.
53. *Sand concretions.* Desert between Camps 40 and 50.
53A. *Jasperite* and *quartz.* Between Camps 47 and 48. September 10, 1891.
53B. *Micaceous sandstone.* Outcropping between Camps 47 and 48. September 10, 1891.
54. *Calcareous tuffa.* From an extinct mound-spring, between Camps 52 and 53. September 11, 1891.
54A. *Carbonaceous travertine.* Between Camps 52 and 53. September 11, 1891.
54B. *Nodular limestone.* Between Camps 52 and 53. September 11, 1891.
55. *Quartz-pebbles.* Between Camps 53 and 54. September 12, 1891.
55A. *Porcellanised sandstone.* Cliffs between Camps 53 and 54. September 12, 1891.
55B. *Obisdian bombs.* Found in Great Victoria Desert. September 1, 1891 ; October 2, 1891.
56A. *Gneiss*, with garnets. Between Camps 53 and 54. September 15, 1891.
56B. *Mica-schist.* Between Camps 53 and 54. September 15, 1891.
56C. *Pegmatite.* Between Camps 53 and 54. September 15, 1891.
56D. *Breccia.* Formed by rubble of aforesaid rocks. Between Camps 53 and 54. September 15, 1891.
56E. *Felspar*, out of a *pegmatite.* Between Camps 53 and 54. September 15, 1891.
57. *Micro-oolitic travertine.* Between Camps 54 and 55. September 16, 1891.
58. *Clay.* From the bottom of Queen Victoria Spring. September 24, 1891.
59. *Sandstone* and *conglomerate*, with *loess.* Cover forming the hills south-west of Victoria Spring. September 25, 1891.
60I. *Hornblendic granite.* Between Camps 61 and 62. September 28, 1891.
60Ia. *Syenite.* Between Camps 61 and 62. September 27, 1891.
60I. *Quartz veins* in schistose rocks. Between Camps 61 and 62. September 27, 1891.
60Ia. *Talcose schist.* Between Camps 61 and 62. September 27, 1891.
60A. *Felspathic rock*, highly decomposed (No. 60B.). Between Camps 61 and 62. September 27, 1891.
60B. *Granitite* (felspathic rock, binary granite). Between Camps 61 and 62. September 27, 1891.

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61. *Siliceous slate* (lydite). Between Camps 63 and 64. September 29, 1891.

61A. *Grit rock.* Between Camps 63 and 64. September 28, 1891.

61B. *Siliceous sand-conglomerate* (first state of weathering of 61A). Between Camps 64 and 65. September 30, 1891.

61C. *Siliceous conglomerate* (second state of decomposition of 61A). Between Camps 64 and 65. September 30, 1891.

62. *Gravel and gravel-conglomerate.* Great Victoria Desert. September 2, 1891; September 25, 1891.

63. *Limestone nodules.* Between Victoria Spring and Fraser Range. September 25, 1891; October 1, 1891.

64. *Magnesite.* Found amongst the lime-nodules. September 28, 1891.

65. *Semi-vitrified sand.* Deposited by white ants in hollow trees. September 30, 1891.

66. Vacat.

67. *Garnetiferous gneiss.* Symonds Hill, Fraser Range. October 15, 1891.

67I. *Hornblendic schist.* Main mass of Fraser Range. October 15, 1891.

68. *Garnetiferous Mica-schist.* North of Fraser Range. October 15, 1891.

68I. *Quartz in veins.* West side of Fraser Range. October 16, 1891

68II. *Quartz* from a *Pegmatite* gangue. Western parts of Fraser Range. October 16, 1891.

69. *Limonite.* North parts of Fraser Range. October 16, 1891. Cap of lode.

69I. *Specularite.* Cap of lode. North of Fraser Range.

69II. *Psilomelane.* Cap of lode. North of Fraser Range. October 16, 1891.

70A. *Felspar* in *pegmatite,* Kangaroo Hill. Fraser Range. October 16, 1891.

70B. *Mica* in *pegmatite,* Kangaroo Hill. Fraser Range. October 10, 1891.

71. *Argillaceous slate.* Between Camps 70 and 71. November 3, 1891.

72. *Hornblendic slate.* Between Camps 70 and 71. November 3, 1891

72A. *Quartz* as lode in schistose rocks. Between Camps 70 and 71. November 3, 1891.

73. *Gneiss.* Between Camps 70 and 71. November 3, 1891.

74. *Indurated hornblendic slate.* Between Camps 70 and 71. November 4, 1891.

75. *Talcose gneiss* (sericit gneiss?). Near waterhole between Camps 71 and 72. November 11, 1891.

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75. *Decomposed gneissic rock.* Same locality. November 4, 1891.
75A. *Siliceous conglomerate.* Cliffs near salt lake, between Camps 72 and 73. November 5, 1891.
75B. *Ferruginous quartz-conglomerate.* Low cliffs along a salt lake, between Camps 72 and 73. November 5, 1891.
75C. *Diabase.* Dykes outcropping in a salt lake between Camps 72 and 73. November 5, 1891.
76. *Diabase.* Specimen of æolian erosion. Chain of salt lakes between Camps 72 and 73. November 5, 1891.
76A. *Siliceous breccia.* Found on shore of small salt lakes between Camps 72 and 73. November 5, 1891.
76B. *Argillaceous sandstone.* Forming a cliff between Camps 73 and 74. November 6, 1891.
77. *Clay* from the bottom of Lake Lefroy; south shore. November 7, 1891.
77A. *Siliceous limonite.* South shore of Lake Lefroy. November 7, 1891.
78. *Efflorescent salts.* Lake Lefroy. November 7, 1891.
79. *Diabase.* South shore of Lake Lefroy, Parker Hills. November 7, 1891.
79A. *Diabase-porphyry.* Parker Hills. November 7, 1891.
79B. *Hornblendic gneiss.* Parker Hills. November 7, 1891.
80. *Indurated hornblendic slate.* Mount Monger and Hunt's Well. November 8, 1891.
81. *Hornblendic schist.* Ranges between Camps 75 and 76. November 8, 1891.
82. *Granite.* Outcropping in big boulders between Camps 76 and 84. November 11-19, 1891.
83. *Gravel,* consisting of a quartzose conglomerate and claystones. Between Camps 80 and 82. November 15-16, 1891.
84. *Quartzose grit,* forming the material for the gravel. Near Mount Caroline. November 17, 1891.
84A. *Quartz* in veins and layers between the grit. Near Mount Caroline. November 17, 1891.
85. *Siliceous schist.* Between Camps 84 and 85. November 11, 1891.
86. *Hornblendic slate* country rock of auriferous lodes at Southern Cross, Yilgarn. November 20, 1891.
86A. *Semi-opal* from Fraser's South Mine. Presented by Captain Oats.
86B. *Tungsten ore.* Found in Fraser's South Mine. Captain Oats.
86C. *Auriferous quartz* from the Central Mine. Presented by Captain Nicholls.
86D. *Auriferous quartz,* from the Central Extended Mine. Presented by Captain Rodgers.

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86E. *Wulfenite*, from the Central Extended Mine. Presented by Captain Rodgers.
86F. *Auriferous quartz*, from Hope's Hill Mine, Yilgarn.
86G. *Steatite*, from Hope's Hill Mine (Mr. Dreyer), Yilgarn.
86H. *Molybdenite*, from Hope's Hill Mine, Yilgarn.
86I. *Kaolin* (auriferous), Hope's Hill Mine, Yilgarn.
87. *Hornblendic schist.* Golden Valley, Yilgarn. December 2, 1891.
87A. *Hornblendic slate.* Golden Valley. December 2, 1891.
87B. *Jasper* (highly ferruginous quartz). Dykes and leaders at Golden Valley. December 2 1891.
87C. *Auriferous quartz*, from Katherine Mine, Golden Valley. December 2, 1891. Presented by the Captain.
87D. *Auriferous quartz*, from the Waterhole Mine, Golden Valley. December 2, 1891. Presented by the Captain.
87E. *Quartz with pyrites*, from the lowest level (150) of Katherine Mine. December 2, 1891.
87F. *Hornblende.* Presented by Mr. Huggins, of Golden Valley.
87G. *Travertine.* Ground in creek-bed of Golden Valley. Decem ber 2, 1891.
87H. *Argillaceous limestone* (travertine) in cracks and crevices of Catherine Mine, Golden Valley. December 2, 1891.
88. *Bat guano.* In caves of a granite rock near Camp 89, Lake Deborah. November 5, 1891.
89. *Auriferous quartz* from Ullaring. Presented by Mr. Speckmann, of Golden Valley.
90. *Quartzite.* Rocks near Camp 94. December 11, 1891.
91. *Siliceous clay*, resulting from weathered granite rocks near Camp 94. December 11, 1891.
92. *Siliceous sinter.* Covering granite rocks near Camp 94. December 11, 1891.
93. *Argillaceous sandstone.* North of Mount Churchman, Camp 98. December 15, 1891.
94. *Sandstone.* Near Camp 99. December 16, 1891.
95. *Decomposed gneissic rock.* Between Camp 94. December 16, 1891.
96. *Augite-schist.* Near Camp 101 (Mount Kenneth). December 20, 1891.
97. *Schaalstein (porphyry tuffa).* Ten miles west of Mount Kenneth. February 21, 1891.
98. *Diabase* (decomposed). Between Camps 103 and 104, Canning Hills. December 12, 1891.
98A. *Ferruginous quartzite-slate.* Canning Hills. December 22, 1891.
99A-C. *Hornblendic slates* (different states of decomposition). Canning Hills. December 22, 1891.

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100. *Decomposed metamorphic schist.* Canning Hills. December 22, 1891.
101. *Decomposed metamorphic rock.* Canning Hills. December 22, 1891.
102. *Indurated slate.* Ten miles N.W. of Townsend Station, Murchison Goldfield. January 2, 1892.
103. *Hornblendic slate.* Camp 111. January 2, 1892.
104. *Opaline sinter.* Twenty-two Miles Well, near Cruikshank's Station. January 3, 1892.
105. *Sand conglomerate.* Near Cruikshank's Station, Annean; Camp 113. January 3, 1892.
106. *Asbestos*, from Mt. Magnet. Presented by Mr. T. C. Simpson. December 1, 1892.
107A. *Gold quartz*, from the Nannine Mine, Murchison goldfield. Presented by Mr. McPherson, discoverer of the field. January 13, 1892.
107B. *Jasperite* (ferruginous quartzite). Murchison Goldfield.
107C. *Decomposed slaty rock.* Murchison Goldfield.
107D. *Hornblendic slate.* Murchison Goldfield.
107E. *Talcose slate.* Murchison Goldfield.
107F. *Micaceous schist.* Murchison Goldfield.
107G. *Amphibole schist.* Murchison Goldfield.
107H. *Mica slate.* Murchison Goldfield.

N.B.—A complete collection of the above was presented to the School of Mines, Adelaide, and a nearly complete collection to each of the following institutions:—Geological Museum, Perth; Royal College of Science, London; and Mining Academy, Freiberg.

SUPPLEMENTARY NOTES ON THE ABOVE-NAMED COLLECTION.*

By A. W. Stelzner, Professor of Geology and Palæontology, of the Royal Saxon Academy of Mines at Freiberg.

Mr. Victor Streich, Adelaide.

Dear Sir—According to your desire, I submit to you my opinion on the rock specimens collected by you, especially on those which require, according to my opinion, a different determination as given by you on the labels.

"1B. *Epidote Diabase.* Everard Range, occurring in dykes." It is probably one of those mixtures consisting of quartz and

* Received since the above list was printed.—[Ed. 13/3/93.]

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epidote which occurs frequently in crevices of granites and syenites, and which are to be taken as a product of lateral segregation of these rocks.

"1G. *Diorite*, in huge masses west of main mass of Everard Range." According to the microscopical examination of the prepared rock-section, quartzose diabase of ophitic structure; quartz is only present in small quantities. As an accessory constituent is to be mentioned apatite. The same applies to 1H.

"8. *Metamorphic hornblendic rock.* Ten miles west of Camp No. 2." Is gneiss.

"10B. *Diorite.* Protruding low granite hills two miles north-west of Camp No. 4." Is quartzose diabase. Plagioclase and quartz show partly granophysic structure. Some biotite is also present.

"11A. *Diorite.* Low hills between Camps 4 and 5." Is olivine diabase.

"17. *Diorite.* Low hills near Camp 9." Is very compact olivine diabase.

"22. *Felspathose rock.* Low range, Camp 14." Is a very fine granular granite.

"26. *Diorite.* Small veins in granite of Mount Sir Thomas." Is diabase poor in olivine.

"33A. *Porphyrite.* Dykes in porphyritic syenite, Skirmish Hill." There are in the principal matrix of this rock porphyritic orthoclase crystals. As the petography of to-day applies the word porphyry only to porphyritic rocks containing plagioclase, the term felsite-porphyry would be more appropriate.

"39. *Diorite* (Bell rock). Cavenagh Range." Is according to the result of microscopical examination of the prepared rock section a very compact olivine diabase.

"40. *Tachylite.* Mount Cooper, Cavenagh Range." This rock is of such an extremely fine grain, that I can not determine it, even with the aid of the microscope on rock sections.

"41A. *Granulite.* Ten miles East of Camp 33, Barrow Range." This rock resembles so closely the granulite of the Saxon granulite-ellipsis, that it could have been found there as well!*

"47. *Felstone.* Mount Squires." Felsite-porphyry (*vide* N. 33A).

"48. *Epidosite.* Intruding as veins, the syenite of Mount Squires." These veins are results of lateral-segregation (like 1B), and can not be looked upon as special rock formations. The same is to be said about N. 49 and N. 49A. (quartzose diabase). In the syenite of the Plauenshe Grund near Dresden these small segregation-veins are of constant occurrence.

*Herman Credner, Erlaeuterungen der geol. Special — Karte von Sachsen, Sectionen Geringswalde, Glauchau, Rochlitz, Waldheim.

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"49. *Feldstone-porphyry.* Dykes in Mount Squires." According to the prepared rock section a true felsite-porphyry.

"53B. *Micaceous sandstone.* Outcropping between Camp 47-48." According to its lithological character, I should call it micaceous schist.

"55B. *Obsidian-bombs.* Found between Everard Range and Fraser Range." Most decidedly not of cosmic origin, as suggested by you in your private letter to me. At least, so far there are no vitreous masses known to me of meteoric origin. According to their shape, I feel inclined to pronounce them as waterworn, and I should think that the obsidian, from which they are derived, will be found yet *in situ*. I cannot say anything more about them without any knowledge of their occurrence.

"56A. *Gneiss with garnets.* Between Camps 53 and 54." The specimen submitted to me is free from felspar, and, therefore, micaceous schist.

"671. *Hornblende-schist.* Main mass of Fraser Range." Is, according to the microscopical examination of the rock section, an undecomposed diabase, which is distinguished on account of its containing highly pleochroitic augite and biotite and apatite as accessory components.

"72. *Hornblendic slate.* Between Camps 70 and 71." In consideration of the microscopical examination of a section of this rock, to be pronounced as amphibolite.

"75C. *Diabase.* Dykes in salt lake between Camps 72 and 73." Like 72, and therefore not an intrusive rock.

"80. *Indurated hornblendic slate.* Mount Monger and Hunt's Well." Is indurated argillaceous slate.

"87F. *Hornblende.* Golden Valley." Is fibrous tourmaline, as ascertained by the microscope and the blowpipe (containing boracic acid).

"96. *Augite-schist.* Near Camp 101, Mt. Kenneth." According to the microscopical examination, rather diorite, which contains, probably as a secondary formation, small quantities of quartz and epidote.

"107B. *Micaceous schist.* Murchison Goldfield." Contains felspar, and therefore to be called gneiss.

Without any knowledge of the formation and occurrence of the rock specimens submitted to me, I am not able to give any geological notes on them. I have, therefore, limited myself to these few petrographical notes, and I hope and wish that they will be of some use to you.

Yours obediently,

A. W. STELZNER.

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APPENDIX.

LIST OF ROCK SPECIMENS

COLLECTED BY MR. WELLS ON A JOURNEY EAST FROM MURCHISON GOLDFIELD, DETERMINED BY PROFESSOR TATE.

Sandstones.

30. Fine sandstone. March 19, 1892.
31A. Coarser siliceous sandstone. March 22, 1892; lat. 26° 47′, long. 123° 13′.
32. Coarser siliceous sandstone. March, 24, 1892.
33B. Sandstone (laminated). March 24, 1892.

Quartzites.

2A. Schistose quartzite, banded with hæmatite. February 26, 1892.
2B. Schistose quartzite, banded with hæmatite. February 26, 1892.
19. Quartzite. March 8, 1892.
42. Quartzite. April 2, 1892.
26. Banded quartzite. March 12, 1892.
40A. Banded quartzite. March 31, 1892.
34. Quartzite, with cavities containing ilmenite. March 27, 1892; lat. 26° 26′, long. 121° 50′.

Clays.

20. Decomposed clay-slate. March 8, 1892.
22. Impure kaolin. March 8, 1892.
30. White siliceous mudstone. March 19, 1892.
33C. White hard slate. March 24, 1892.
38. Decomposed clay-slate. March 30, 1892; lat. 26° 30′, long. 120° 52′.

Ironstones, &c.

17. Ironstone. March 7, 1892.
23. Ironstone, limonite. March 9, 1892.
31. Siliceous ferro-mudstone. March 22, 1892.
36. Ironstone gossan. March 28, 1892.
6D. Agglomerated hollow spheroids of siliceous limonite (concretionary). March 1, 1892.

Flints.

21B. Chert. March 8, 1892.
40B. Chert. March 31, 1892.

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Vein Quartz.

3A. Vein quartz. February 27, 1892; lat. 27° 20′, long. 120° 10′.
4. Vein quartz. February 29, 1892.
6A. Vein quartz. March 1, 1892.
6B. Vein quartz. March 1, 1892.
6C. Breccia of vein quartz with limonite-cement. March 1, 1892.
10A. Vein quartz. March 5, 1892.
11A. Vein quartz. March 5, 1892.
11B. Breccia of vein quartz with limonite-cement. March 5, 1892.
14. Vein quartz. March 6, 1892.
27A. Auriferous quartz. March 12, 1892.
11C. Vein quartz. March 5, 1892.
27. Vein quartz. March 12, 1892.

Grits, &c.

1. Sharp quartzitic grit (probably derived from waste of granite). February 25, 1892.
3B. Coarse grit. Same nature as 1. February 27, 1892.
9. Foliated felspatho-quartzose grit. March 4, 1892.
10B. Ferruginous quartzose grit. March 5, 1892.
12. Conglomerate of small quartz-pebbles. March 5, 1892.
16. Decomposed quartzose felstone. March 7, 1892; lat. 27° 34′, long. 121° 47′.
18. Conglomerate of small quartz-pebbles, with smaller grains. March 7, 1892.
21A. Quartzitic grit. March 8, 1892.
24. Sharp quartzitic grit (probably derived from waste of granite). March 10, 1892.
33A. Sharp quartzitic grit (probably derived from waste of granite). March 24, 1892.
39. Conglomerate of small quartz-pebbles. March 31, 1892.

Granulites, &c.

25A. Granulite. March 11, 1892.
25B. Granulite. March 11, 1892.
28. Granulite, passing to granite. March 13, 1892.
29. Granulite. March 13, 1892.
35. Decomposed macro-granulite. March 27, 1892; lat. 26° 26′, long. 121° 50′.
37. Decomposed granulite. March 30, 1892.
41. Decomposed macro-granulite. March 31, 1892.

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Diorites.

5. **Gabbro.** March 1, 1892.
13. **Diorite.** March 6, 1892.

Miscellaneous.

6B. **Hornblende-schist.** March 1, 1892.
27B. **Micaceous schist, decomposed.** March 12, 1892.
7. **Wood asbestos.** March 1, 1892.
15. **Travertine.** March 6, 1892.

N.B.—A complete collection of the above was presented to the **School of Mines**, Adelaide.

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METEOROLOGY.

By VICTOR STREICH,

Geologist to the Expedition.

Notes re Meteorological Record.—A description and enumeration of the meteorological instruments employed being unnecessary, it remains here only to say a few words about the method of observing, and also a few remarks as to the occasional observations of meteorologically interesting phenomena. The hours of observation were 9 a.m., 3 p.m., and 9 p.m. The last-mentioned hour, however, could not be kept during the earlier stages of the journey, owing to the early hour at which the camp retired for the night. The instruments themselves were read according to the instructions given by Mr. Todd, C.M.G., in the handbook for the officers. Concerning the completeness of the register, every effort was made to keep it regularly posted; but from unavoidable causes, such as difficulties in travelling usually met with, or geological researches of an engrossing nature receiving particular attention at the hour for observation, several blanks in the register were necessitated. The entries in the register state the simple reading-off of the instruments, no corrections or reductions of any kind have been made on them. The observations have been all made by myself, except from the 10th to the 15th January, 1892, at the Annean Station, Murchison, where, during my absence on a flying trip to the neighbouring goldfields, Mr. Helms had the goodness to keep the meteorological register, I having satisfied myself from previous trials that our methods of observing were alike. As it will be noticed, more elaborate observations were made when in stationary camps (October, 1891, Fraser Range), and also that a kind of "term observations" were made on the 21st of each month, at least whenever possible. It will be found stated in the register (under the heading "Remarks") when observations were made in camp or *en route*. The barometrical readings when *en route*, of course, cannot claim to be of great importance as *meteorological* observations, as the height when read-off at the aforesaid hours differed sometimes considerably. Unfortunately a great number of thermometers had to be sacrificed for the sake of science, as all thermometrical observations were read off after swinging, and to swing a thermometer on camel back without accident in a dense Australian bush is by no means an easy matter. Fortunately, however, the supply was sufficient to prevent the loss of any records in the register.

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Occasional Observations.--Short entries have been made in the register; but it will be serviceable to give here a more exhaustive description of them.

Zodiacal Lights.—These were developed with a remarkable degree of distinctness, especially from August to December, and were visible about half an hour after sunset. Under favourable circumstances, not only was the well-known glowing pyramid to be seen in the west ,but also a smaller and less distinct one rising over the eastern horizon. The connecting bridge, however, between these two, which is said to be visible in dry, tropical, as also sub-tropical regions, could not be discerned, neither was a zodiacal light ever to be seen before day-dawn.

Meteors.—These phenomena were frequently observed all through. At the end of the month of July, and at the beginning of August, however, they were more numerous than at any other time. The radiative point of the "Swarm" was situated in the northern portion of the sky. Another less prominent flock of meteors was observed on the 21st December, its radiative point lying apparently in the southern part of the firmament.

Irridescent Clouds.—A splendid phenomenon was observed on the 29th December, 1891. A stratus cloud partly cirrial covering the sun, shone in splendid rainbow colours, green and violet being the most conspicuous. It lasted for about two minutes, and the cloud being the only one disappeared suddenly at the expiration of about that time. It occurred at 1.20 p.m., temperature being at the time about 104°, wind slight, in a south-westerly direction.

Surface Temperature.—Careful observations were also taken to ascertain the nocturnal decrease in temperature of the surface of the earth, and the temperature of the air. This was done in the undermentioned way, and read-off in the morning before sunrise. For that purpose three thermometers were used, one being fixed about six inches above the ground, the next two feet and a half, and the third five feet, and the following results were obtained:—

(1) *Birksgate Range.*—Camp surrounded by high granite ranges, and well protected from winds. Immediately above the ground, 37½° ; 2½ ft. above ground, 39° ; 5 ft. above ground, 40° F.

(2) At *Skirmish Hill.*—Camp in a fairly open plain, on the east side of the hill, about half a mile away. Six inches above ground, 23° ; 2 ft. above ground, 24·5° ; 5 ft. above ground, 26° F.

(3) At *Barrow Range.*—Camp in an open plain, only a few granite rocks some 100 yards off. Six inches above ground, 25° ; 2½ ft. above ground, 28° ; 5 ft. above ground, 30° F.

The great difference of the three readings of the last observa-

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tion is probably due to the unprotectedness of the camp, whilst the two other observations show the influence which is exercised by neighbouring hills. In all three cases the observations show differences which are quite astonishing. The minimum temperature for every night, as given in the observations, was taken 5 ft. above ground.

Cloudage.—The *kind* of clouds is not given in the meteorological tables, as there is no space provided for such particulars, although same were duly registered in the Field Book, as well as the direction from which they were moving.

It may be mentioned here that it was observed that the *cirrus*, the genuine feathery kind, was generally found in the early morning and in the evening shortly before and after sunset, and that this upper-current cloudage almost invariably moved from north-west.

The *cirro-cumulus* was rarely observed, and never so moving, from a distinct direction, but whenever seen it could be taken as a sure indication of an increase of atmospherical moisture.

Cumulus clouds generally aggregated towards noon. The direction in which they moved was in the early portion of our journey (May-July) very variable, but during the latter part an easterly direction was prevalent.

From these general remarks however about cloudage, and its main direction of moving, the portion about, and south of, Queen Victoria Spring, and down to the Fraser Range, must be excepted, for this region being situated within the reach of coastal influences, the climate and conditions were consequently more of a maritime nature.

Some of the reasons for assuming that a distinct climatic boundary exists here have been given in a former chapter, and are purely of topographical nature.

It may be added here that a few days before reaching Queen Victoria Spring a strong cooling south-south-west breeze could be noticed springing up about 11 a.m. every day, which increased in strength as the coast was approached.

Should not also the existence of such a strong soakage, as Queen Victoria Spring has been at one time, be attributed to the meeting in this region of the dry and hot north-east winds of the interior with the moist southerly coastal winds, which, if it should take place, would be bound to create at times heavy atmospherical disturbances; and, furthermore, does not the occurrence of Xanthorrhea thereabout also point to increased atmospherical precipitates?

On Electric Discharges.—None were observed during the early part of the journey. It was at the end of September, between Victoria Spring and Fraser Range, when slight light-

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ning, without thunder, was noticeable towards east. A few similarly slight discharges without atmospherical precipitates were observed during the next three months, but it was not until the beginning of January that the proper thunderstorm season set in, notwithstanding the intense dry heat which was experienced at this time.

Here a few words about the phenomenon of booming noises, about which a few remarks are given in the "Handbook for the Guidance of the Officers of the Expedition," viz. :— "Travellers and explorers in different parts of the world have occasionally been startled by loud booming sounds resembling the distant discharge of heavy pieces of artillery. Captain Sturt, in his explorations on the Darling in 1828, and again in 1844 in the Far North, between the Stony Desert and Eyre's Creek, reports having heard similar noises, but was unable to offer any suggestions as to their cause. In the event of such sounds being heard by yourself or by other members of the party, you will be careful to note the exact time on which heard, the supposed distance away and the direction, the state of the atmosphere (whether clear or cloudy), the nature of the surrounding country (whether sandy and flat or rocky and mountainous), and, by way of comparison, refer to similar well-known sounds. Enquiries on these points should also be made at all stations throughout Central Australia, and at all outlying sheep and cattle stations at which the expedition may happen to call, carefully noting every instance of these loud noises being heard, together with the name of your informant, his opinion as to the cause, and such other matter as would be recorded under the above instructions if heard by yourself. It is of the utmost importance to note whether such sounds are accompanied by any sensible vibrations of air or earth, and whether accompanied by any rumbling like thunder."

Though not fortunate enough to perceive it myself, by making enquiries I found that they were heard at the Fraser Range Station, at Yilgarn, and frequently during the last eight years at the Annean Station. No definite information was, however, obtained, as to the time, state of weather when they occurred, or such other details. Taking into consideration that these sounds were heard at three places which are geologically and topographically so vastly different, viz., *Fraser Range*, high and steep mountains of metamorphic rocks, *Yilgarn* slightly undulating country, salt lakes and plains of moderate extent, and *Annean Station*, wide, boundless, alluvial flats, and furthermore the same phenomenon has been heard in the Lake Eyre country and the Upper Murray, both regions of an entirely different geological character, certainly different to those places in Western

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Australia, I feel convinced that this noise is not caused by any force of geological or terrestrial origin. But as these places from which the phenomenon in question is reported belong to the most arid regions of Australia, in which nothing but the meteorological conditions are alike, it must be assumed that these subaerial conditions are the cause. I should think that they are detonations resulting from electrical discharges in the form of a glow discharge, which while spreading over a large area is less perceptible, and is said to occur more frequently in a dry continental climate during a dry thunderstorm.

NOTES ON THE METEOROLOGICAL OBSERVATIONS TAKEN BY MR. VICTOR STREICH.

By C. Todd, Esq., M.A., F.R.S.

May, 1891.

The expedition travelled this month from Warrina Station on the Great Northern or Transcontinental Railway, lat. 28° 12′ S., long. 135° 48′ E. to Everard Range.

The observations were commenced on the 3rd, but, owing no doubt to the difficulties incidental to rough bush travelling, they are somewhat incomplete, and for the most part were taken *en route*, and not at camps. The aneroid was read at 9h. a.m. and 3h. p.m., at elevations varying from, approximately, 323 feet to 1800 feet above sea level. The dry and wet bulb thermometers were read regulary at 9h. a.m. and 3h. p.m., but not at 9h. p.m. Only a few readings of the minimum thermometer were taken, and but one of the maximum. These omissions render the observations of less value than those of subsequent months; but it is due to Mr. Streich to say that, taking his circumstances into consideration, he deserves great credit for the manner in which he carried out the work entrusted to him. It is not an easy task to take observations on a camel's back travelling over a rough country.

Referring to the observations in May, the temperature at 9h. a.m. ranged generally between 55° and 70°, only once rising above 70°, viz., 74° on the 6th, the maximum on that, the only day on which it was recorded being 86°, the hottest day experienced during the month, the thermometer standing at 80° at 3 p.m.; on only two days did it reach 80° at 3 p.m., viz., 80° on the 5th, and 81° on the 26th. The weather was therefore fairly cool and pleasant, with south-east, east, and north-east winds

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only twice veering to north-west, and on two days to south-west. The air was mostly dry, but there was a thunderstorm on the 7th, 8th, followed by steady rain, about 0·250 inches falling before 3 p.m. of the 8th, and about 1·750 inches, continuous rain lasting from 4 p.m. of the 8th till 9h. a.m. of the 9th, with a high barometer (aneroid 30·20 at 9h. a.m., falling rapidly to 29·85 at 3 p.m. Rain also fell on the 27th, 28th, and 29th, setting in on the last date at 3 p.m., and raining heavily with storms during the night (1,600 feet above sea level; aneroid 28·50 at 9h. a.m. of the 30th, and 28·20 at 3 p.m.) A white frost on the morning of the 11th, the temperature falling to 32°.

Aneroid.

Mean at 9h. a.m.	...	29·45
" 3h. p.m.	...	29·32

Temperature.

	Dry Bulb.	Wet Bulb.
Mean at 9h. a.m. ...	61·0	55·0
" 3h. p.m. ...	73·0	58·0

JUNE.

During this month the observations were taken regularly, there being but few gaps. The aneroid and the thermometers were read at 9 a.m and 3 p.m., and the minimum and maximum temperatures were also taken. The expedition travelled from near Mount Illbillie (lat. 27° 3′, long. 132° 30′) to Camp 11 (lat. 27° 28′, long. 130° 38′), at elevations varying from 1,950 feet on the 1st to 1,700 feet on the 30th. The observations were taken in camp, near Mount Illbillie, on the 2nd, 3rd, 4th, 5th, and 6th, at 1,950 feet, and the height of the summit was hypsometrically determined to be 3,010 feet. During these five days the aneroid at the camp at base of hill ranged from 28·10 inches at 9h. a.m. of the 2nd to 28·40 at 3 p.m. on the 6th, the minimum and maximum temperatures being as under:—

	Min.	Max.
June 2	35°	67°
" 3	37	69
" 4	37	54
" 5	38	56
" 6	33	55

On the 3rd, at noon, the aneroid at the base of Illbillie was 28·10; the temperature, dry bulb 68°, wet bulb 50°; relative humidity, $\frac{31}{100}$. At 3h. p.m., at the top of the mount, the aneroid read 27·12; dry bulb (thermometer) 61°, wet bulb 51°; relative humidity, $\frac{50}{100}$.

Rain set in after 2 p.m. on the 1st, and showers continued

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during the three following days, with the wind on the 1st and 2nd north-west, veering afterwards to south-east. A little rain fell also on the 12th, and there was a Scotch mist on the 13th.

The observations were also taken in Camp 4 (lat 27° 10′, long. 131° 48′) from the morning of the 10th till 9h. a.m. of the 18th. Elevation of the hypsometer 1,850 feet. The aneroid during this period ranged from 28·03 inches at 3h. p.m. of the 10th to 28·49 at 9h. a.m. on the 14th, and the minimum and maximum temperatures were as under :—

	Min.	Max.	
10th	32°	69°	Clear.
11th	35	66	Cloudy.
12th	30	69	Cloudy, little rain.
13th	29	60	Cloudy.
14th	29	66	Clear.
15th	26·5	63	Clear.
16th	29	69	Clear.
17th	28	67	Clear.
18th	40	70	Cloudy.

The only other rests were at Camp 6 (1,575 ft.), on 20th and 21st ; Camp 9 (1,540 ft.), from evening of 23rd to 9h. a.m. of the 27th ; and at Camp 10, on 28th and 29th.

With the exception of the first four days, and the 11th and 12th, the weather was fine ; the winds variable, south-east being the most frequent, and on some days, especially during the last five days, west (N.W. to S.W.).

The nights throughout were very cold, the temperature falling below freezing on 16 nights, the lowest being 22°, on the morning of the 23rd, with clear sky and light north-east wind, the mean, often minimum, reading was 30·5° or 1·5° below freezing. The highest minimum was 40° on the 18th. The days were pleasantly warm, the highest temperature (73°) curiously enough occurred on the same day as the lowest (22°), viz., on the 23rd, or a range of 51° during the day.

The sky was clear, or mostly clear, on 13 days, and partially clouded on 11 days. Faint zodiacal light on evening of 25th.

Aneroid.

Mean at 9h. a.m.	...	28·32
" 3h. p.m.	...	28·23

Temperature.

		Dry Bulb.	Wet Bulb.
Mean minimum	...	30·5°	
" at 9h. a.m.	...	52·6	46·7°
" maximum	...	64·2	
" at 3h. p.m.	...	61·3	49·1

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Highest during month... 73 on 23rd
Lowest " " ... 22 on 23rd

Cloud (0—100).

Mean amount at 9h. a.m. ... 3·9 per cent.
" " at 3h. p.m. ... 4·2 "

JULY.

During this month the expedition was constantly on the move, from Camps 12 to 31 the country traversed lying between lat. 27° 33′, long. 130° 34′, and lat. 26° 10′, long. 127° 57′, at elevations above sea level ranging from 1,500 to 1,850 feet. The only long stoppages were four days (21st, 22nd, 23rd, and 24th) at Camp 27, 1,355 feet by hypsometer above sea level; and Camp 31, or Fort Müller, 1,517 feet by hypsometer, from July 28 to August 2—six days.

The chief features of the month were very cold nights, moderately warm days, and clear sky. The lowest temperature was 19°, on the morning of the 20th, at Camp 26 (lat. 27° 20′ 14″, long. 130° 4′), with a dry north-east wind, but the thermometer fell below freezing on 17 nights out of 29 on which observations were taken, and the minimum recorded 35° on only four nights. On the morning of the 1st, at Camp 12, 1,580 feet, it was 20°, and the mean of the lowest readings was only 30° 2′. As showing the rapid rise in temperature after sunrise in the interior, it may be mentioned that the mean at 9h. a.m. was 52° 9′, whilst the mean maximum was 68° 4′, or a mean daily range of 38° 2′. Owing to difficulties incidental to bush travelling, and where the observations have to be taken *en route*, the maximum readings were missed on five days; out of the remaining 26 days the temperature reached or receded 70° on 15 days, the highest being 77° on the 19th, the minimum on the morning of the same day being 24°, showing a range of 53° in less than 12 hours. The air was also very dry, as shown by the readings of the wet-bulb thermometer. The sky was clear, or nearly so, on 23 or 24 days. The weather was fine throughout, except on the night of the 9th-10th, when a few showers fell. The winds were westerly during the first half of the month, and east and south-east afterwards, a strong easterly gale blowing on the nights of the 28th, 29th, and 30th. There was a warm southerly wind on the 31st, with a little rain and hail. A Mallet seismometer was fixed up at Camp 31, but indicated no earth tremors (*vide* Geological Report, *ante* p. 79).

Highest reading of aneroid, 28·72 inches, at 9h. a.m. on 18th, Camp 24. Lowest reading, 27·50 inches, at 3h. p.m. on the 9th, on the top of Mount Watson, 2,226 feet by hypsometer. Mean

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reading of aneroid, 9h. a.m., 28·38 inches. Mean reading of aneroid, 3h. p.m., 28·29 inches.

Temperature.

Mean minimum	30·2
" at 9h. a.m.	52·9
" maximum	68·4
" at 3h. p.m.	66·7

Wet Bulb.

Mean at 9h. a.m.	43·5
" at 3h. p.m.	47·5

AUGUST.

There was not much travelling this month, and the observations were all made in the immediate neighbourhood of the Barrow Range (Camps 31 to 37), or between long. 127° 57′ and 127° 15′, and lat. 26° 11′ and 26° 30′; principally (on the 4th, and from the 9th to the 22nd) at Camp 33, long. 127° 33′ E., lat. 26° 3′ S., 1,566 feet above sea level, and Camp 35, at the base of Mount Squires—127° 30′ E., 26° 14′, 1,590 feet. The month was almost cloudless throughout, the prevailing wind being east to south-east, occasionally veering to north and north-west. Heavy north-western gale was recorded on the 13th, veering to south-west. The nights during the first three weeks were very cold, the thermometer sinking below freezing point on 14 nights out of the 21, but warmer during the rest of the month. On two nights—the 15th and 19th—the minimum was 20°. The warmest night was on the 30th; minimum, 48°. The days, as usual, were warm, the thermometer being at or above 80° on seven days, and above 70° on 27 days; the highest being 85° on the 22nd and 31st, or a range of 65° in the month; the lowest maximum being 65° on the 18th. The aneroid barometer reached its minimum, 28·10 inches, at 3 p.m. on the 11th, at Camp 33; and its maximum, 28·61 inches, at 9 a.m. on the 20th.

Aneroid.

Mean at 9 a.m.	28·42	inches
" at 3 p.m.	28·33	"
" at 9 p.m.	28·37	"
Mean minimum temperature ...	33·5°	
" at 9 a.m. Dry bulb ...	57·7	
Wet bulb ...	45·5	
" maximum temperature ...	75·7	
" at 3 p.m. Dry bulb ...	72·2	
Wet bulb ...	51·1	

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Mean at 9 p.m.	Dry bulb ...	54·3°
	Wet bulb ...	42·1
"	temperature of month ...	54·6
"	diurnal range	42·2

Cloud (0—100).

Mean amount at 9 a.m.	... ...	1 per cent.
" "	at 3 p.m.	2 "
" "	at 9 p.m.	0 "

Heavy north-west gale from noon to sunset on the 13th.

Heavy south-east gale set in at 4h. a.m. on 26th, and sky overcast.

The sky was also overcast for a few hours before sunrise on the 31st, with strong north-east wind.

Zodiacal light, bright, on 5th, between 6.30 and 7.20 p.m.; and on evening of 25th. Shooting stars frequent on evenings of 5th, 6th, and 7th; and two fine meteors on the evening of the 8th.

SEPTEMBER.

Country travelled over from Barrow Range to Fraser Range at elevations varying from 1,600 to 700 feet above the sea. The days, with four exceptions, were warm, the temperature being 90° or over on five days, and over 80° on 11 days, absolute maximum 98° on the 27th. The nights were cool, falling to or below freezing on six nights, the lowest being 26°, on the morning of the 20th, when there was a white frost. The weather was exceptionally cool on the 16th, 17th, 18th, and 19th. With a heavy gale from the west and south-west on the first day, the maximum temperatures, 55° on 16th, 58° on 18th, and 61° on 19th, and the air was so humid that the wet bulb thermometer at 3 p.m. read (50°) only one degree lower than the dry bulb. Wind south-east to north-east. Light rain between 5 a.m. and 8 a.m. on 13th, and a few drops on nights of 18th and 19th. Sky mostly clear, but overcast or partially clouded on 11th, 12th, 13th, 16th, and 17th.

Lightning noted on the 12th and 25th, and fog on the 13th. Zodiacal light seen on evenings of 3rd and 23rd. The observations imperfect after 25th through difficulties in travelling.

Pressure.

Mean reading of aneroid at	9h. a.m. ...	28·82
" "	3h. p.m. ...	28·94
" "	9h. p.m. ...	28·81

Temperature.

Mean of minimum	... ...	38·4°
" at 9h. a.m.	... ...	61·1

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Mean maximum	78·2°
" at 3h. p.m.	73·8
" at 9h. p..m.	55·8
" diurnal range	39·8
Extreme range in month	72·0

Wet Bulb.

Mean at 9h. a.m.	49·7°
" at 3h. p.m.	53·9
" at 9h. p.m.	46·0

Cloud (0—100).

Mean amount at 9h. a.m. ...	23 per cent.
" " 3h. p.m. ...	32 "
" " 9h. p.m. ...	9 "

OCTOBER.

No observations were taken during the first four days, owing to difficulties in travelling. From the 5th to the end of the month, with a break on the 20th, 21st, and 22nd, they were taken at Camp 69, Fraser's Range (lat. 31° 51′ S., long. 122° 45′ E.), 1,236 feet above sea level. The nights were now warmer than during the previous months, the temperature falling below 40° on only one night, viz., 37° on the 10th, and the minimum readings ranged at or over 50° on 12 nights out of 26. The days were moderately hot, the maximum readings from 68° on the 9th to 98° on the 19th, or over 90° on three days. The sky was clouded or overcast nearly every day, with light to moderate variable winds, alternating for the most part from south-east to south-west. Thunderstorms were experienced on six days, viz., 6th, 19th, 23rd, 24th, 27th, and 28th, but were accompanied by only a few drops of rain, except on the 28th, when there was a good shower, with hail.

Mean reading of aneroid at 9h. a.m. ...	28·80 inches
" " 12h. noon ...	28·78 "
" " 3h. p.m. ...	28·70 "
" " 6h. p.m. ...	28·76 "
" " 9h. p.m. ...	28·79 "

Temperature.

	Dry Bulb.
Mean minimum	49·5°
" at 9h. a.m.	65·1
" at 12h. noon	76·3
" maximum	79·7
" at 3h. p.m.	76·5
" at 6h. p.m.	68·4
" at 9h. p.m.	62·2

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Cloud (0– 100).

Mean amount at	9h. a.m.	...	3·9	per cent.
" "	noon	...	3·5	"
" "	3h. p.m.	...	4·1	"
" "	6h. p.m.	...	2·5	"
" "	9h. p.m.	...	1·9	"

Dew on 8th, 17th, 15th, 29th, and 30th.

NOVEMBER.

The expedition travelled from Fraser Range to the Yilgarn Goldfields, and the observations were taken, *en route*, at heights varying from 1,500 to 900 feet above the sea. No observations could be recorded on the 20th, 21st, and 22nd, owing to the absence of Mr. Streich from the Camp, and also on the 30th.

The nights were moderately cool, and the days hot, the minimum thermometer ranging between 41°, the lowest on the 4th, and 65°, and over 60°, on eight nights. During the day the temperature reached or receded 90 on 17 days out of the 26 on which readings were taken, and was above 100° on four days, the absolute maximum being 105° on the 23rd. The weather was fine and dry, only a few drops of rain falling during two thunderstorms on the 6th and 14th. The wind was light and variable, south-east the most prevalent.

Mean reading of aneroid at	9h. a.m.	...	28·62	inches.
" "	3h. p.m.	...	28·50	"
" "	9h. p.m.	...	28·54	"

Temperature.

Mean minimum	... ...	...	56·1°
" "	at 9h. a.m.	...	74·9
" maximum	... ...	...	92·8
" "	at 3h. p.m.	...	90·6
" "	at 9h. p.m.	...	70·1

Cloud (0—100).

Mean amount at	9h. a.m.	...	20	per cent.
" "	3h. p.m.	...	32	"
" "	9h. p.m.	...	18	"

DECEMBER.

Country passed over between Yilgarn and the Murchison District at elevation of from 1,600 to 1,000 feet above the sea. Weather hot throughout, the thermometer ranging from 90° upwards on 25 days, and over 100° on 16 days, the absolute maximum being 109° on the 27th and 28th. The nights too were for the most part warm, falling below 60° on only ten nights; the lowest, 52°, on the 10th; the highest minimum, 75°, on the

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27th. The extreme range of temperature was 57°, whilst the average daily range was 36° 1′. Winds variable, frequently south-west and north-west. Weather fine, but on many days clouded. Thunderstorms, with only a few drops of rain, on the 5th and 6th; and lightning also on the 8th, 25th, and 26th. A westerly gale, with rain, on the night of the 10th; and rain, with south-easterly wind, on the 16th.

Fine solar halo on the 29th.

Mean reading of aneroid at 9h. a.m.	28·42	inches
" " at 3h. p.m.	28·33	"
" " at 9h. p.m.	28·37	"

Temperature.

Mean minimum	62·8°
" at 9h. a.m.	8·38
" maximum	98·9
" at 3h. p.m.	96·3
" at 9h. p.m.	78·8
" of wet bulb at 9h. a.m. ...	62·6
" " at 3h. p.m. ...	64·7
" " at 9h. p.m. ...	60·2

Cloud (0—100).

Mean amount at 9h. a.m. ...	15	per cent.
" " at 3h. p.m. ...	23	"
" " at 9h. p.m. ...	15	"

Clear or cloudless on 13 days.

JANUARY, 1892.

The observations after the 3rd were all taken at the Annean Station, in the Murchison District, about 1,550 feet above the sea, and extend only to the 21st, after which date they were discontinued. Weather hot throughout, the temperature exceeding 90° on every day but the 11th (88·8°) and over 100° on 18 days, and of the 21 the highest being 114°. The minimum readings range from 65° on the 1st to 82° on the 10th. The extreme range during the three weeks 49°, and the mean daily range 29·8°

Thunderstorms on the 2nd, 3rd, 6th, 10th, 13th, 14th, 15th, and 16th; and lightning seen on several other days, but very little rain fell, only 0·470 inches, as follows:—

1st	...	9h. a.m.	...	0·190 inches
2nd	...	9h. a.m.	...	0·110 "
6th	...	9h. p.m.	...	0·110 "
16th	...	9h. p.m.	...	0·060 "

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Generally more or less cloudy, especially in the afternoon and night.

Mean reading of aneroid at	9h. a.m.	...	28·18 inches
" "	3h. p.m.	...	28·08 "
" "	9h. p.m.	...	28·12 "

Temperature.

Mean minimum	...	...	74·3°
" at 9h. a.m.	...	...	89·6
" maximum	...	...	104·1
" at 3h. p.m.	...	...	101·1
" at 9h. p.m.	...	...	88·1
" temperature	...	...	89·2

Wet Bulb.

Mean at 9h. a.m.	...	...	66·8
" at 3h. p.m.	...	...	69·1
" at 9h. p.m.	..	...	67·6

Cloud (0—100).

Mean amount at	9h. a.m.	...	29 per cent.
" "	at 3h. p.m.	...	51 "
" "	at 9h. p.m.	...	50 "

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METEOROLOGICAL OBSERVATIONS TAKEN BY MR. VICTOR STREICH, GEOLOGIST ACCOMPANYING THE ELDER EXPLORING EXPEDITION. 1891—MAY.

Day of Month.	Camp. Morning. No.	Camp. Morning. Height.	Camp. Evening. No.	Camp. Evening. Height.	Aneroid Barometer. 9 a.m.	Aneroid Barometer. 9 p.m.	Temperature. Dry Bulb. Min.	Dry Bulb. 9 a.	Dry Bulb. Max.	Dry Bulb. 3 p.	Dry Bulb. 9 p.	Wet Bulb. 9 a.	Wet Bulb. 3 p.	Wet Bulb. 9 p.	General Direction of Wind.
1															
2															
3	Nilpena, S.A.		Cootanoorina, S.A.		29·99			58		77		53	54		E.
4	Cootanoorina, S.A.		"		·95		36	64		79		56	60		E.
5	"		"		·94		40	66		80		57	60		E.
6	"		"		·94		44	74	86	84		63	65		E.
7	"		Arkaringa Ck.		·94		53	65		73		58			S. & S.E.
8	Arkaringa Ck.		"		·97			58		66		45	60		E.S.E.
9	"		"		30·20			52		55		51	54		N.E.
10	"		"					55				49			E.
11	"		"		·10		32	50		62		48	54		E.
12	En route		En route		·20			54		68		49	52		E. & N.E.
13	"		"		29·98			55		75		51	55		E.
14	"		"		·96			56		74		49			S.E. & E.
15	"		"		·83			55		75		51	55		N.E.
16	"		In camp		·48			59		72		50	56		N.W.
17	In camp		"		·36			61		74		57	58		S.W.
18	En route		En route		·61			61		70			56		S.E.
19	"		Wintana Well	1100	·36			59		70		53	54		E.
20	Wintana Well	1100	En route		·23			61		74		53	57		E. & N.
21	En route		"		·15					75			56		E.
22	"		"		·08			64		75		58	58		E. & S.E.
23	Arcoellina Well		Arcoellina Well		28·96		51	67		76		66	60		N.E.
24	"	1250	"	1250	·98		55	68		79		60	59		N.E.
25	"		"		·98		48	64		79		58	61		N.E.
26	"		"		·94		42	69		81		59	60		N.E.
27	"		"		·94		56	67		78		59	51		N. & N.E.
28	"		"		·86			61		65		58	61		S.W.
29	"		En route		·72			60		64		56	61		N.E.
30	En route	1600	"		·50			64		74		59	64		N. & N.W.
31	"	1800	"		·35			56		64		53	58		N. & N.W.

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Day of Month.	Camp. Morning. No.	Height.	Evening. No.	Height.	Aneroid Barometer. 9 a.m.	9 p.m.	Temperature. Dry Bulb. Min.	9 a.	Max.	3 p.	9 p.	Wet Bulb. 9 a.	3 p.	9 p.	General Direction of Wind.
1	En route		En route		28·39			55		50		54	50		N.W.
2	Everard Range Depôt Camp	1950	Everard Range Depôt Camp	1950	·10		35	56	67			55			N.W.
3	"	"	"	"	·11		37	58	69	61		50	51		E.
4	"	"	"	"	·22		37	51	54	54		51	51		S.E.
5	"	"	"	"	·28		38	48	56	53		47	49		S.E.
6	"	"			·36		33	50	55	51		44	45		S.E.
7	"	"	Camp 1	1980	·59			48	59	57		42	48		S.E.
8	Camp 1	1980	Camp 2	1900	·33		27	51	68	65		46	51		S.W.
9	Camp 2	1900	Camp 3	1800	·26		33	56	66			50			S.E
10	Camp 3	1800	Camp 4	1875	·10		32	55	69	68		50	50		N. & S.W.
11	Camp 4	1555	"	"	·19		35	49	66	66		46	50		S.W.
12	"	"	"	"	·34		30	54	69	65		50	54		W.
13	"	"	"	"	·44		29	57	60	57		55	48		S.W.
14	"	"	"	"	·49		29	54	66	63		47	50		S.E.
15	"	"	"	"	·41		26·5	51	63	61		45	49		S.E.
16	"	"	"	"	·37		29	60	69	67		50	49		N.E. & S.W.
17	"	"	"	"	·43		28	52	67	63		44	49		E. & S.W.
18	"	"	Camp 5		·47		40	47	70	64		44	47		S·E.
19	Camp 5	1580	Camp 6	1575	·48		35	48	60	58		42	46		E. & S.E.
20	Camp 6	1575	"	"	·42		30	46	57	55		41	45		S.E.
21	"	"	"	"	·41		27	48	57	55		43	45		E.
22	"	"	Camp 7	1550	·29		24	48	63	61		40	47		E.
23	Camp 7	1550	Camp 8		·40		22	44	73	69		39	49		N.E.
24	Camp 8		Camp 9	1540	·53		24	51	70	66		44	49		S.W.
25	Camp 9	1540	"	"	·41		30	59	72	70		49	51		E. & N.W.
26	"	"	"	"	·25		34	59	69	69		49	58		N.W. & W.
27	"	"	Camp 10		·17		36	58	62	61		47	49		W.
28	Camp 10		"	"	·06		40	59	63	62		48	49		W.
29	"	"	Camp 11		·05			50		64		44	51		W.
30	Camp 11		Camp 12	1580	·31		26	55	68			46			W.

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Day of Month.	Camp. Morning. No.	Height.	Evening. No.	Height.	Aneroid Barometer. 9 a.m.	9 p.m.	Temperature. Dry Bulb. Min.	9 a.	Max.	3 p.	9 p.	Wet Bulb. 9 a.	3 p.	9 p.	General Direction of Wind.
1	Camp 12	1580	Camp 13	1590	28·31		20	55				46			W.
2	Camp 13	1590	Camp 14	1730	·24		35	56	72	68		45	48		W.
3	Camp 14	1730	"	"											
4	"	"	Camp 15	1700	·18			64		78		46	54		W.N.W. & W.
5	Camp 15	1750	"	"	·21		42	62	75	71		51	54		W. & N.W.
6	"	"	"	"	·30		34	52	72	68		48	53		W.
7	"	"	Camp 16		·25		29·5	55	72	72		45	51		N.W.
8	Camp 16		Camp 17	1500	·32		27	48	70	69		44	51		W. & S.W.
9	Camp 17	1500	"	"	·37		34	46	57	56		42	45		W. & W.S.W.
10	"	"	Camp 18		·33		38	49	60	59		45	44		W.
11	Camp 18		Camp 19	1850	·26		40	54		61		46	52		Calm
12	Camp 19	1850	"	"	·19		29	54	71	70					W.
13	"		Camp 20	1835	·20		28	49							W.
14	Camp 20	1835	Camp 21		·15		29	49	69	65		44	47		W.
15	Camp 21		Camp 22	1750	·17		25	52	70	63		45	48		S.E.
16	Camp 22	1750	Camp 23		·26		32	51	68	62		42	48		S.E.
17	Camp 23		Camp 24		·65		26	50	71	65		42	46		E.
18	Camp 24		Camp 25		·71		33	54	67	67		42	47		E.
19	Camp 25		Camp 26		·72		24	50	77	68	41	40	47	31	E.
20	Camp 26		Camp 27	1355	·63		19	57	73	67	39	44	46	36	N.E.
21	Camp 27	1355	"	"	·44		29	57	70	68	45	42	47	32	E.S.E.
22	"	"	"	"	·45		26	55	71	71	46	42	47	36	S.E.
23	"	"	"	"	·54		25	51	68	65	47	42	47	36	E.
24	"	"	"	"	·57		24	52	70	67	48	45	47	41	N.E., E., S.
25	"	"	Camp 28	1475	·62		27	51	68	66	44	42	48	38	E.
26	Camp 28	1475	Camp 29	1400	·32		28	53	64	63	48	41	43	40	E. & S.E.
27	Camp 29	1400	Camp 30		·36			49	65	65	45	40	42	37	E.
28	Camp 30		Camp 31 (Fort Müller)	1517	·45		34	47	66	64	50	40	46	39	E. & S.E.
29	Camp 31	1517	"	"	·46		35	55	70	64	50	44	46	38	E.
30	"	"	"	"	·46		34	58	70	66	51	44	46	41	E.
31	"	"	"	"	·37		40	52	60	57	47	40	44	38	S.W., S., S.E.

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Day of Month.	Camp. Morning. No.	Height.	Evening. No.	Height.	Aneroid Barometer. 9 a.m.	9 p.m.	Temperature. Dry Bulb. Min.	9 a.	Max.	3 p.	9 p.	Wet Bulb. 9 a.	3 p.	9 p.	General Direction of Wind.
1	Camp 31 (Fort Müller)	1517	Camp 31	1517	28·44	28·42	24	52	67	64	47	42	47	39	S.E.
2	"	"	Camp 32	"	·42	·43	32	47	78	70	50	43	50	40	E. & S.E.
3	Camp 32		Camp 33	1565	·32	·31	23	57	79	73	55	47	48	43	E. & S.E.
4	Camp 33	1565	"	"	·37	·35	25	54		71	58	46	50	38	E. & S.E
5	"	"	"	"	·35	·36	42		79		60			46	E.
6	"	"	"	"	·35	·34	24	60	72	71	59	45	51	39	S.E.
7	"	"	"	"	·34	·32	25	64	77	73	42	44	50	38	E.
8	"	"	"	"	·39	·35	29	59	73	70	57	46	50	43	E.
9	"	"	"	"	·41	·36	33	55	70	68	52	48	49	49	E. & S.E.
10	"	"	"	"	·33	·20	35	57	79	70	48	47	50	43	E.
11	"	"	"	"	·17	·16	35	64	79	75	54	48	53	42	N.E.
12	"	"	"	"	·24	·23	38	62	82	80	58	48	58	44	N.N.W.
13	"	"	"	"	·23	·19	39	68	82	80	62	50	57	48	N.E & N.W.
14	"	"	"	"	·37	·36	40	55	70	64	53	45	48	43	S.E. & E.
15	"	"	"	"	·41	·30	20	55	72	68	48	43	51	38	N.E.
16	"	"	"	"	·34	·31	28	63	80	79	64	41	51	44	S.W.
17	"	"	"	"	·50	·49	39	49	66	65	50	43	49	39	E. & S.E.
18	"	"	"	"	·54	·50	30	48	65	64	52	42	49	41	E. & S.E.
19	"	"	"	"	·58	·53	20	50	72	70	52	39	51	40	E.
20	"	"	"	"	·61	·53	28	58	74	72	54	46	51	40	E.
21	"	"	"	"	·58	·49	28	63	78	73	48	47	51	38	E.
22	"	"	Camp 34		·44	·29	35	67	85	82	64	48	54	44	N.N.E.
23	Camp 34		Camp 35	1590	·43	·43	36	58	79	72	58	48	53	44	E. & S.E.
24	Camp 35	1590	"	"	·51	·46	37	53	84	81	58	45	54	43	E. & S.E.
25	"	"	"	"	·34	·22	40	52	78	76	66	45	54	48	N.E. through E. to S.W.
26	"	"	"	"	·48	·42	41	50	66	65	49	46	49	40	S.E.
27	"	"	"	"	·53	·46	34	58	71	69	57	44	51	44	E.
28	"	"	"	"	·59	·51	44	62	73	70	51	46	52	42	N.W.
29	"	"	"	"	·58	·40	47	61	76	74	53	48	54	44	N.N.E.
30	"	"	Camp 36		·41	·40	48	31	81	76	49	44	52	39	N.
31	En route		Camp 37		·42	·50	39	70	85	82	55	50	55	42	N.E. & W.

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Day of Month.	Camp. Morning. No.	Camp. Morning. Height.	Camp. Evening. No.	Camp. Evening. Height.	Aneroid Barometer. 9 p.m.	Aneroid Barometer. 9 a.m.	Temperature. Dry Bulb. Min.	Dry Bulb. 9 a.	Dry Bulb. Max.	Dry Bulb. 3 p.	Dry Bulb. 9 p.	Wet Bulb. 9 a.	Wet Bulb. 3 p.	Wet Bulb. 9 p.	General Direction of Wind.
1	En route		Camp 38		28·58	28·58	39	76	90	88	54	52	59	39	Calm
2	"	1600	Camp 39	1100	·51	·22	32	68	89	87	58	48	56	42	N.W.
3	"	1550	Camp 40		·31	·45	46	60	82	80	52	50	55	46	S.W.
4	"		Camp 41		·37	·66	30	56	68	65	51	44	50	44	N.E.
5	"	1680	Camp 42		·75	·64	28	51	68	68	50	44	56	46	E.
6	"		Camp 43		·55	·39	29	57	73	71	54	48	54	43	E.
7	"	1500	Camp 44		·37	·16	47	59	89	85	73	47	59	55	E. & N.E.
8	"		Camp 45		·40	·37	50	68	78	77	54	54	56	48	S.W.
9	"		Camp 46	1300	·49	·59	36	57	78	72	55	51	57	49	SE., SSW., & S.
10	"		Camp 47	1100	·75	·79	40	58	78	75	52	49	51	43	E.
11	"	1150	Camp 48		·75	·69	50	65	70	70	48	51			S.E. & S.W.
12	"		Camp 49	980	·77	·99		57	78	74	60	48	56	45	S.W., W., & S.E.
13	"		Camp 50		29·18	29·09	44	55	66	66	54	52	53	45	S.E. & S.W.
14	"		Camp 51		·13	·02	32	55	79	78	53	46	53	45	S.W.
15	"		Camp 52	850	28·99	·19	35	62	79	76	60	54	55	49	W. & N.W.
16	"		Camp 53		·63	28·89	36	55	55	51	49	49	50	43	S.W. & W.
17	"		Camp 54	1100	29·00	·96		59		66		49	52		N.E.
18	"		Camp 55		28·95	29·02	38	53	58	57	54	44	44	43	E. & S.E.
19	"		Camp 56		29·23	·24	35	52	61	58	49	47	49	43	S.E.
20	"		Camp 57		·32	·32	26	56	76	75	55	47	50	49	S.E.
21	"		Camp 58	750	·32	·20	34	55	76	75	49	50	53	46	E.
22	"		Camp 59		·21	·20	36	60	82	79	50	53	54	46	N.E.
23	"	1050	Camp 60 (Queen Victoria Spring)	836	28·95	·00	37	70	83	80	69	55	55	52	E.
24	Camp 60		Camp 60	836	29·20	28·97	41	75	90	87	67	55	57	48	N. & N.E.
25	En route		Camp 61		28·77	·60	41	74	92	90	68	54	60	55	N.E.
26	"		Camp 62	1160					95						
27	"		Camp 63	1000	28·73			65	98			52			
28	"		Camp 64	1450			60		80						
29	"		Camp 65	1100						69					
30	"		Camp 66	1000	28·90										

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Day of Month.	Camp. Morning. No.	Camp. Morning. Height.	Camp. Evening. No.	Camp. Evening. Height.	Aneroid Barometer. 9 a.m.	Aneroid Barometer. 9 p.m.	Temperature. Dry Bulb. Min.	9 a.	Max.	3 p.	9 p.	Wet Bulb. 9 a.	3 p.	9 p.	General Direction of Wind.
1	En route		Camp 67												
2	"		Camp 68	1250											
3	Camp 68	1250	"	"											
4	"	"	Camp 69 (Fraser Range)	1236											
5	Camp 69	1236	"	"	28·59	28·42	59	72	83	75	61				S.E. & S
6	"	"	"	"	·47	·46	40	66	80	77	59				S.W. & W.
7	"	"	"	"	·74	·75	51	66	73	69	66				S.W.
8	"	"	"	"	·73	·66	44	65	78	77	59				W.
9	"	"	"	"	·77	·78	49	50	68	68	58				W. & S.W.
10	"	"	"	"	·83	·81	37	57	78	76	55				
11	"	"	"	"	·87	·90	49	60	75	73	59				S.E.
12	"	"	"	"	·94	·90	53	58	74	69	62				S.E.
13	"	"	"	"	·91	·85	42	64	73	71	59				S.E.
14	"	"	"	"	·84	·74	40	60	77	73	61				S.E. & S.
15	"	"	"	"	·75	·78	58	68	77	73	55				W. & S.W.
16	"	"	"	"	·84	·86	51	57	78	76	65				W., S.W., & S.
17	"	"	"	"	·92	·86	45	55	78	78	59				
18	"	"	"	"	·85	·76	40	69	92	88	65				N.E.
19	"	"	"	"	·76	·76	55	85	98	96	79				N.E., E., & S.E.
20	"	"	"	"											
21	"	"	"	"											
22	"	"	"	"											
23	"	"	"	"	28·70	28·62	55	62	86	79	68				E. & S.E.
24	"	"	"	"	·64	·58	59	79	93	85	72				W. & N.W.
25	"	"	"	"	·79	·89	55	79	85	85	64				N.W. & S.E.
26	"	"	"	"	·95	·86	52	75	86	86	68				N.E. & S.
27	"	"	"	"	·86	·76	50	65	80	80	63				S.E. & N.W.
28	"	"	"	"	·77	·81		60	72	62	53				W., S., & S.E.
29	"	"	"	"	·87	·80	49	58	69	65	60				S.W. & S.
30	"	"	"	"	·82	.82	47	68	82	75	63				W. & S.W.
31	"	"	"	"	·94	·88	59	65	80	79	60				S.W. & S.

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Day of Month.	Camp. Morning. No.	Height.	Camp. Evening. No.	Height.	Aneroid Barometer. 9 a.m.	9 p.m.	Temperature. Dry Bulb. Min.	9 a.	Max.	3 p.	9 p.	Wet Bulb. 9 a.	3 p.	9 p.	General Direction of Wind.
1	Camp 69	1236	Camp 69	1236	28·89	28·71	59	70	86	83	65				S.E. & S.
2	"	"	Camp 70	850	·73	·80	61	75	95	95	64				N., N.W., & W.
3	En route	1300	Camp 71	1200	29·05	·92	53	72	82	80	64				S.E. & S.W.
4	"	900	Camp 72		28·92	·90	41	70	89	85	96				E.
5	"		Camp 73	1500	29·06	·50	55	65	93	91	70				E.
6	"		Camp 74	1100	28·58	·60	60	83	99	97	70				N.W. & S.W.
7	"	1050	Camp 75	1200	·81	·65	53	74	90	89	77				E. & S.E.
8	"		Camp 76 (Hunt's Well)	1250	·59	·62	63	75	90	90	72				
9	Camp 76	1250	"	"	·65	·63	60	77	102	100	70				E.
10	En route		Camp 77		·57	·43	65	80	101	97	81				
11	"	1500	Camp 78	1200	·46	·51	59	81	98	93	79				E. & S.E.
12	"		Camp 79		·62	·50	61	81	99	93	70				E.
13	"		Camp 80	1600	·44	·21	59	73	96	96	68				E. & N.E.
14	"		Camp 81	1650	·13	·23	56	87	98	96	67				N.W., W., S.E.
15	"		Camp 82		·41	·13	56	65	86	86	63				S.E. & S.
16	"		Camp 83	1750	·23	27·95	48	67	89	87	68				S.E. & E.
17			Camp 84	1600	·21	28·37	66	85	91	89	79				NE. WNW., SW.
18	Camp 84	1600	"	"	·44	·51	50	70	90	90	69				S.E.
19	En route	1100	Camp 85	1150	·81	·68	56	72	86	81	69				S.E. & E.
20	"		Camp 86 (Southern Cross)	950											
21	Camp 86	950	"	"											
22	"	"	"	"											
23	En route		Camp 87		28·50	28·25		75	105	105	73				N.
24	"		Camp 88	1125	·27	·36	62	82	103	100	75				N.W. & S.W.
25	Camp 88	1125	"	"	·51	·58	59	77	89	88	68				S.E., S.W., W.
26	"	"	Camp 89	930	·87	·83	49	66	84	82	62				E. & S.E.
27	Camp 89	930	"	"	·87	·76	42	63	86	86	69				N.E. & E.
28	"	"	"	"	·81	·77	56	81	90	88	72				E.
29	"	"	"	"	·82	·71	59	82	96	88	69				E.N.E. & N.E.
30	"	"	"	"											

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Day of Month.	Camp. Morning. No.	Height.	Evening. No.	Height.	Aneroid Barometer. 9 a.m.	9 p.m.	Temperature. Dry Bulb. Min.	9 a.	Max.	3 p.	9 p.	Wet Bulb. 9 a.	3 p.	9 p.	General Direction Wind.
1	Camp 89	930	Camp 89	930											
2	"	"	"	"		28·49			105	101	83		70	62	
3	"	"	"	"	28·42	·49	63	91	100	97	78	69	64	62	WNW,NW,SW
4	"	"	"	"	·62	·53	59	72	90	90	76	60	67	59	E. & S.E.
5	"	"	"	"	·61	·51	60	70	90	89	77	59	70	63	E.
6	"	"	"	"	·56	·49	59	72	89	88	75	63	69	62	E.
7	Camp 89	"	Camp 90		·43	·34	62	89	102	90	63	68	63	58	S.E., N.W.
8	En route		Camp 91	1200	·61		58	70				58			N.E.
9	"		Camp 92	1500	·37	28 09	54	69	97	91	74	54	58	55	
10	"		Camp 93	1600	·17	·28	52	72	89	81	68	59	66	55	S.W. & W.
11	"		Camp 94	1850	·35	·19	53	66	93	88	66	51	57	57	S.W., W.N.W.
12	"		Camp 95	1700	·22	·09	54	78	94	90	68	57	60	54	S.W.
13	"		Camp 96	1600	·29	·23	53	74	87	84	73	58	61	58	S.W. & W.
14	"		Camp 97	1500	·30	·17	56	80	95	92	71	61	61	51	W. & N.W.
15	"		Camp 98	1400	·33	·49	59	86	101	99	79	61	62	58	W.
16	"		Camp 99	1100	·62	·48	65	76	80	60	69	60	65	66	E. & S.E.
17	"		Camp 100	1000	·37	·57	66	86	98	96	78	64	65	63	W.
18	Camp 100	1000	"	"	·63	·61	67	96	104	104	81	66	65	61	S. & S.W.
19	En route		Camp 101	1150	·48	·41	69	94	106	105	88	85	69	63	E.
20	"		Camp 102	1500	·27	·18	69	93	105	104	84	64	66	64	N.W. & W.
21	"		Camp 103	1600	·27	·32	59	82	98	98	79	63	64	62	W. & S.W.
22	"		Camp 104	1200	·43	·55	64	86	93	91	78	59	63	60	S.E. & S.W.
23	"		Camp 105	1400	·63	·58	60	84	100	97	76	61	63	56	E.
24	"		Camp 106	1000	·59	·53	67	90	103	101	88	63	65	60	N.E., N., & S.E.
25	Camp 106	1000	"	"	·54	·45	68	95	108	107	95	62	67	64	E.
26	"	"	"	"	·48	·41	72	97	107	106	91	69	72	65	N.W. & W.
27	En route		Camp 107	950	·43	·30	75	96	109	108	85	69	66	62	W. & S.W.
28	"		Camp 108		·22	·33	69	89	109	108	83	61	64	59	
29	Camp 108		"	"	·38	·32	68	98	106	102	88	60	59	59	E. & S.W.
30	En route		Camp 109	1100	33	·28	69	89	105	101	86	65	68	66	
31	"		Camp 110	1400	·32	·08	72	90	106	106	84	66	68	63	N.E. & E.

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Day of Month.	Camp. Morning. No.	Camp. Morning. Height.	Camp. Evening. No.	Camp. Evening. Height.	Aneroid Barometer. 9 p.m.	Aneroid Barometer. 9 p.m.	Temperature. Dry Bulb. Min.	Dry Bulb. 9 a.	Dry Bulb. Max.	Dry Bulb. 3 p.	Dry Bulb. 9 p.	Wet Bulb. 9 a.	Wet Bulb. 3 p.	Wet Bulb. 9 p.	General Direction of Wind.
1	En route		Camp 111	1600	28·14	28·07	65	89	105	102	87	64	69	69	E. & S.
2	"		Camp 112		·10	27·88	69	90	106	106	87	67	70	75	N.E., N., S.W.
3	"		Camp 113	1550	·18	28·10	75	82	100	95	90	72	72	74	N.E, N.W, S.W.
			(Annean Station)												
4	Camp 113	1550	"	"	·22	·23	69	90	101	100	80	75	76	70	W.
5	"	"	"	"	·27	·17	71	85	100	99	86	67	68	72	N.E.
6	"	"	"	"	·19	·10	78	97	104	102	86	70	72	70	N.E. & S.
7	"	"	"	"	·20	·16	78	93	105	103	92	69	71	64	NNW, NNE, S
8	"	"	"	"	·18	·10	81	95	110	109	96	68	72	66	N.E.
9	"	"	"	"	·10	·07	80	102	114	112	95	73	72	72	N. & S.
10	"	"	"	"	·23	·24	82	88	99	96	90	68	69	68	N.E.
11	"	"	"	"	·35	·31	75	78	88	84	82	64	65	65	N.E.
12	"	"	"	"	·30	·20	71	84	101	100	87	63	71	68	N.E.
13	"	"	"	"	·20	·10	72	92	108	107	92	64	65	68	N.E., N., N.W.
14	"	"	"	"	·13	·06	74	96	107	104	95	64	69	64	N.E., S.E.
15	"	"	"	"	·18	·12	79	95		107	92	62	68	68	N.
16	"	"	"	"	·18	·14	80	92	108	102	90	66	70	67	N.E., N.W.
17	"	"	"	"	·12	·06	77	92	108	104	89	67	68	64	N.E., S.W.
18	"	"	"	"	·14	·12	69	86	99	97	82	65	66	63	S.
19	"	"	"	"	·16	·12	78	92	108	102	88	68	70	66	E. & N.E.
20	"	"	"	"	·14	·10	68	84	97	93	82	62	62	64	S., E.
21	"	"	"	"	·13	·08	70	79	100	99	83	64	66	63	N.E.
22	"		"												
23	"														
24	"														
25															
26															
27															
28															
29															
30															
31															

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SCHEDULES OF LATITUDES AND LONGITUDES OF CAMPING PLACES Nos. 1-104, ON ROUTE OF ELDER EXPLORING EXPEDITION,

From June 6th, 1891, to January 2nd, 1892, compiled by Mr. L. A. Wells, Surveyor to the Expedition.

Depot Camp—Starting point near Mount Illbillee, latitude 27° 3′ 0″, longitude 132° 30′ 0″.

Camp No.	Latitude.			Longitude (approximate).			Camp No.	Latitude.			Longitude (approximate).		
	°	′	″	°	′	″		°	′	″	°	′	″
1	27	5	0	132	23	0	46	28	4	29	126	9	0
2	27	5	0	132	10	0	47	28	13	53	125	58	0
3	27	9	0	131	55	0	48	28	28	0	125	48	0
4	27	10	19	131	48	0	49	28	41	49	125	38	0
5	27	7	30	131	31	0	50	28	55	14	125	25	0
6	26	59	44	131	14	0	51	29	1	40	125	18	0
7	27	9	0	131	4	0	52	29	12	0	125	5	0
8	27	19	0	130	54	0	53	29	23	56	124	51	0
9	27	20	54	130	53	0	54	29	33	25	124	38	0
10	27	16	0	130	40	0	55	29	44	45	124	22	0
	(approx.)						56	29	54	35	124	9	0
11	27	28	0	130	38	0	57	30	5	12	123	54	0
12	27	33	35	130	34	0	58	30	14	5	123	41	0
13	27	32	30	130	28	0	59	30	25	48	123	28	0
14	27	25	0	130	23	0	60	30	25	45	123	20	15
15	27	27	0	130	9	0	61	30	25	0	123	8	0
16	27	20	19	130	5	30	62	30	44	31	122	57	0
17	27	20	19	130	4	0	63	30	54	0	122	45	0
18	27	16	0	129	57	0	64	31	6	7	122	32	0
19	27	13	0	129	52	0	65	31	17	0	122	38	0
20	27	11	0	129	48	0	66	31	30	45	122	45	0
21	27	9	0	129	30	0	67	31	44	3	122	41	0
22	27	4	0	129	24	0	68	31	57	44	122	35	0
23	26	55	0	129	8	0	69	31	50	56	122	45	0
24	26	50	0	129	58	0	71	31	42	3			
25	26	40	0	128	48	0	72	31	35	45			
26	26	32	0	128	36	0	73	31	26	20			
27	26	23	51	128	28	0	74	31	14	8			
28	26	18	50	128	20	0	75	31	6	30			
29	26	19	30	128	11	0	78	31	10	22			
30	26	13	0	128	1	0	80	31	11	5			
31	26	10	48	127	57	0	83	31	15	42			
32	26	7	30	127	47	0	84	31	15	2			
33	26	3	0	127	33	0	85	31	16	19			
34	26	8	0	127	32	0	89	30	58	56			
35	26	14	20	127	30	0	90	30	54	0	119	2	0
36	26	17	0	127	27	0	(Knutsford)						
37	26	30	13	127	15	0	91	30	49	0			
38	26	39	8	127	7	0	93	30	35	50			
39	26	51	0	127	0	0	94	30	26	10			
40	27	40	0	126	56	0	96	30	4	10			
41	27	10	40	126	52	0	97	29	58	30			
42	27	28	30	126	45	0	98	29	44	50			
43	27	36	10	126	41	0	99	29	32	0			
44	27	43	35	126	34	0	100	29	20	0			
45	27	54	32	126	21	0	104	28	38	35			

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LIST OF HEIGHTS AND POSITIONS OF CAMPS, VERTICAL MEASUREMENTS.

Heights marked with asterisk are taken by hypsometer.

Camp or Name of Place.	Height in feet above sea level.	Height in feet above base.	Camp or Name of Place.	Height in feet above sea level.	Height in feet above base.
Everard Range Camp	1950*		Sandstone Cliffs (between Cs. 41 & 42)	1680	
Mt. Illbillee	3010*	1060	Sandstone Ridge (near C. 44	1500	
Ferdinand Creek ...	1800		Camp 46	1300	
Camp 4	1575*		Camp 47	1100	
Camp 5	1580		Camp 48 (Mound Spring)	1150	
Camp 6	1575		Camp 49	980	
Camp 7	1550		Camp 52	850	
Camp 9	1540		Camp 54	1100	
Camp 11	1500		Camp 58	750	
Camp 12	1580		Between Cs. 59 and 60, on top of the sandhills	1050	
Camp 13 (base of Coffin Hill)	1590		Camp 60 (Queen Victoria Spring)	836*	
Coffin Hill	1800	210	Camp 62	1160	
Camp 14	1730		Camp 63	1000	
Camp 15	1700		Camp 64	1450	
Camp 17 (base of Mt. Watson)	1500*		Camp 65	1100	
Mt. Watson ...	2226*	726	Camp 66	1000	
Camp 19	1850*		Camp 68 (base of Fraser R.)	1250	
Mt. Sir Thomas ...	2535*	685	Camp 69 (Simon's Hill)	1236*	
Camp 20	1835		Peak of Fraser Range	2010*	765
Mt. Sawback (Lindsay)	2300	550	Camp 70	850	
Camp 22 (base of Mt. Sawback)	1750		Summit of Ridge between Cs. 70 and 71	1300	
Camp 27 (base of Skirmish Hill)	1335*		Camp 71	1200	
Skirmish Hill ...	1910*	580	Remarkable Quartzite Bluff, between Cs. 71 and 72	1300	
Camp 28	1475		Salt Lake, between Cs. 71 and 72	900	
Camp 29	1400		Camp 73	1500	
Camp 31 (Fort Müller)	1517*		Camp 74	1100	
Mt. Cooper (Cavenagh R.)	2175*	650	Bed of Lake Lefroy	1050	
Camp 33	1565*		Camp 75 (south of Mt. Monger)	1200	
Camp 35 (base of Mt. Squires)	1590*		Camp 76 (near Hunt's Well)	1250	
Mt. Squires... ...	2270	680	Depôt Hill (N. shore of Lake Lefroy)	1500	
Townsend R. (continuation)		220			
Terrace between Cs. 38 and 39	1600				
Camp 39	1100				
Sandstone Terrace (between Cs. 39 and 40)	1550				

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Camp or Name of Place.	Height in feet above sea level.	Height in feet above base.	Camp or Name of Place.	Height in feet above sea level.	Height in feet above base.
Camp 78	1200		Camp 99 (Lake Moore country)	1100	
Camp 80	1600		Camp 100 (Warne Flats)	1000	
Camp 81	1650		Camp 101 (S. of Mt. Kenneth)	1150	
Camp 83	1750		Camp 102	1500	
Camp 84	1600		Camp 103 (Canning Hills, Broad's Station)	1600	
Claypan between Cs. 84 and 85... ...	1100		Camp 104	1200	
Camp 85	1150		Camp 105	1400	
Camp 86 (Southern Cross)	950		Camp 106 (Watson's Station)	1000	
Camp 88	1125		Camp 107 (Jones' Station)	950	
Camp 89 (Lake Deborah)	930*		Camp 109 (Lake Austin country)	1100	
Camp 91	1200		Camp 110 (Townsend's Station)	1400	
Camp 92	1500		Camp 111	1600	
Camp 93	1600		Camp 113 (Cruickshank's Station)	1550*	
Camp 94	1850				
Camp 95	1700				
Camp 96	1600				
Camp 97 (near Mt. Churchman)	1500				
Mt. Churchman (?)...	1800	260			
Camp 98	1400				

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LICHENES.

By Dr. J. MUELLER.

[*Reprinted from "Hedwigia," heft 5, 1892.]

Trib. **Omphalarieae.**

1. Pyrenopsidium decorticans, J. Müll.

Thallus olivaceo-nigricans, demum decorticando obscure fusco-purpurascens, diffracto-areolatus; areolae ½ mm. latae et 2-3-plo minores, convexulae, hinc inde paucae connatae, fertiles quasi in apothecium hemisphaericum vertice latiuscule foveolatum et sat regulare et laeve abeuntes; discus poriformis; sporae in ascis circ. 30 — 40, globosae et globose-ellipsoideae, circ. 5 — 7 μ longae; gonidia saltem pro magna parte rubricosa, vulgo didyma, hyphis varie moniliformibus cincta.

Species nulli nisi septentrionali *Pyr. granuliformi*, Forss. Gloeolich, p. 60 (Norrl. Hb. Lich. Fenn., n. 354), affinis est et ab ea jam extus forma et colore areolarum laevium et ostiolis amplioribus differt.

S. A. Arcoeillinna, ad saxa silicea.

Trib. **Cladonieae.**

2. Clathrina retipora, J. Müll., L.B., n. 589; (*Cladonia retipora*, Flk., Clad., p. 181). W.A. Karolin.
3. Clathrina aggregata, J. Müll., L.B., n. 589; (*Cladonia aggregata*, Eschw. Bras., p. 278). W. A. Warrangering; terricola.
4. Cladonia alicornis, var. firma, Nyl. Syn., p. 191. S.A. Wawee Waterhole; Everard Range. W.A. Victoria Desert (Camps 62, 66).
5. Siphula caesia, J. Müll.

Podetia laxe caespitosa, circ. 6 — 12 mm. alta, suberecta, superne undique caesia, inferne ochraceo-pallida, et e basi subtereti longe albo-radiculosa, superne flabellatim divisa, divisiones compressae, crassae, 1—2 mm. latae, nonnihil crenato-lobulatae et apice bifido saepe transversim dilatatulae. Apothecia ignota. Gonidia vulgaria, globosa, circ. 7 μ late. In lobulis hinc inde occurrunt gibbositates erumpentes, majusculae, nigrescentes, initia apotheciorum, secus lineam leviter intra-marginalem

* With corrected geographic references.—Ed.

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sitae, sed fructificationis elemente haud ostendunt. Affinis est *S. coriaceae*, Myl.

W.A. Terricola, in Fraser Range.

Trib. **Heterodieae.**

6. Heterodea Mülleri, Nyl. Syn. L. Nov. Caled., p. 9.
   S.A. Everard Range. W.A., Warangering aliisque locis.

Trib. **Usneeae.**

7. Usnea barbata, var. scabrida (Tayl.), J. Müll., Lich. Nov. Gran., n. 20.
   W.A. Ramulicola, in Fraser Range.
   — — var. xanthopoga, J. Müll., L.B., n. 1476.
   W.A. Ramulicola, in Fraser Range.
   — — var. elegans, J. Müll., L.B., n. 1476.
   W.A. Ramulicola, in Fraser Range.

Trib. **Parmelieae.**

8. Theloschistes chrysophthalmus, var. Sieberianus, J. Müll., L.B., n. 581.
   W.A. Ramulicola, Fraser Range.
9. Xanthoria parietina, Norm. Conat. praemiss, p. 17.
   W.A. Rami-ramulicola, in Fraser Range.
10. Xanthoria controversa (Mass.) v. laciniosa; *Parmelia parietina*, v. *laciniosa*, Duf.; Schaer. Enum., p. 51.
   W.A. Ramulicola, in Fraser Range.
11. Physcia stellaris, var. acrita, Nyl., Scand., p. 111.
   S.A. Ramulicola, in Everard Range.
12. Physcia obscura, Nyl. Syn., p. 112.
   S.A. Lignicola, Everard Range.
   — — — var. virella, Th. M. Fries, Scand., p. 142.
   S.A. Corticola, in Everard Range.
13. Parmelia hypoleuca, f. coralloidea, J. Müll., L.B., n. 1145.
   S.A. Everard Range.
14. Parmelia tiliacea, var. minor, J. Müll., L.B., n. 46; corticola.
   S.A. Everard Range. W.A., Fraser Range.
15. Parmelia rutidota, Hook. fil et Tayl., in Lond. Journ. of Bot., III., 1844, p. 645; corticola.
   S.A. Everard Range. W.A., Fraser Range; Karolin.
16. Parmelia conspersa, Ach. Meth., p. 205; saxicola.
   W.A. Fraser Range.
   — — — var. corallina, Krplh. Lichfl. Bay, p. 135.
   S.A. Everard Range.
   — — — var. hypocleista, Nyl., Syn., p. 391; saxicola
   S.A. Everard Range,

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— — — f. isidiosa, J. Müll., L.B., n. 575; ad saxa et ad terram sabulosam.
S.A. Everard Range.
— — — var. stenophylloides, J. Müll. Thalli laciniae breves, angustiores, subadpressae, subtus pallidae; saxicola.
S.A. Everard and Birksgate Ranges.
— — — var. stenophylla, Ach., Meth., p. 206; saxicola.
S.A. Everard Range.
— — — var. isidiosa. Thallus modice isidiosus; saxicola.
S.A. Arcoeillinna; Everard Range. W.A. Victoria Desert.

17. Parmelia adpressa, Krplh., Lich. Glaz., p. 15. S.A. Arcoeillinna.
18. Parmelia congruens. Ach. Univ., p. 491, Sw. L. Amer., t. 4; ad terram sabulosam.
S.A. Everard Range. W.A. Fraser Range; Karolin.
19. Parmelia amphixantha, J. Müll., L.B., n. 1312; ad terram.
W.A. Fraser Range.
20. Parmelia hypoxantha, var. major, J. Müll., L.B., n. 579; ad terram.
W.A. Fraser Range.
21. Parmelia dendritica. Pers. Wett., IL, p. 16; saxicola.
W.A. Victoria Desert; Fraser Range.
— — — f. fuliginosa (Fr.); saxicola.

Trib. **Pannarieae.**

22. Heppia australiensis, J. Müll.

Thalli squamae obscure olivaceo-virentes, confertae, 1—2½ mm. latae, crassiusculae, ex orbiculari obtuse angulosae, v. margine demum minute adscendenti-microlobae; gonidia olivacea, glomeruloso-composita; apothecia solitaria, minuta, evoluta ¾—1½ mm. lata, rufofusca et plana, superficie scabrida, hinc inde annulo tumente thallino nano cincta, caeterum superficiem thalli non excedentia; epithecium fulvum, lamina caeterum hyalina; asci fusiformi-ovoidei, polyspori; sporae globosae, 3½—5 μ diametro aequantes.

Species insignis, ad *Heppiam psammophilam*, Nyl. Symb. Sahar. e Biskra, n. 10, accedens, sed macrocarpa, et sporae minores, squamae non insculptae.

S.A. Ad terram, Wa-wee Waterhole.

23. Heppia acarosporoides, J. Müll.

Squamae nigrescenti-olivacéae, ½—1 mm. latae, orbiculares, integrae v. margine leviter undulato-crenatae, fertiles hemisphaericae, monocarpicae, in margine adpressae, haud insculptae; gonidia olivacea, modice composita; apothecia demum ½ mm. lata, regularia, immersa, non prominentia thallina cincta; discus

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nigro-fuscus, depressus, nudus ; sporae in ascis numerosae, $4\frac{1}{2}$—6 μ longae, globoso-ellipsoideae.

Affinis *H. australiensi*, sed squamulae aliae. Habitu bene accedit ad *Placodium castaneum*, Körb., sed gonidia sunt absolute alia.

S.A. Ad terram, Everard Range.

Trib. **Placodieae.**

24. Amphiloma murorum, var. miniatum. Korb. Syst., p. 111.
S.A. Saxicola, prope Mount Watson.
— — — — var. obliteratum, Korb Syst., p. 111.
W.A. Saxicola, Fraser Range.
— — — — var. areolatum, J. Müll.

Thallus crebre subareolatus, areolae periphericae hinc inde obsolete radiantes, turgidae, subtiliter crebre verruculosae, ochraceo-aurantiacae. Sporae ut in specie. Quasi forma oblitera varietatis *aurantiacae*. Saxicola.

S.A. Near Arcoeillinna Well.

25. Placodium fulgens, var. bracteatum (Ach.), J. Müll., Lich. Pers. n. 14.
S.A. Everard Range.

26. Placodium cervinum, var. percaenum (Schaer.), J. Müll., Lich. Pers. n. 23 ; calcicola.
S.A. Foot of Everard Range. W.A. Fraser Range.

27. Placodium citrinum, J. Müll., L.B., n. 1414.
Urceolaria citrina, Tayl. in Hook Journl. of Bot., 1847, p. 158.
Lecanora Xanthophana, Nyl. L. And. Boliv., p. 379.

Lichen in Australia centrali sicciore vulgaris, at rarius bene evolutus, habitu, magnitudine squamularum et colore flaviore aut magis virenti eximie varians, caeterum ad saxa et ad terram crescens.

S.A. Near Arcoeillinna Well, Everard Ranges, and various places in the vicinity.

Trib. **Psoreae.**

28. Psora decipiens, Hoffm., Lichenos., t. 43, figs. 1-3 ; Mass. Ric. p. 91 ; ad terram.
S.A. Everard Range. W.A. Victoria Desert (Camp 46).

29. Psora psammophila, J. Müller.

Thalli squamae $\frac{1}{2}$—2 mm latae, glauco-virentes, mutua pressione demum angulosae, caeterum orbiculares, planae, undulatim, gibboso-inaequales, undique adnatae ; apothecia $\frac{1}{2}$—1 mm lata, nigra, planoconvexa, primum tenuissime marginata, mox dein immarginata, saepe demum varie in majora composita confluentia,

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intus nigra; epithecium et hypothecium nigrofusca; sporae octonae, ellipsoideae, 8—10 μ longae, circ. 6 μ latae.

A proxima *Ps. glauca* (Tayl.), J. Müll., L.B., n. 1423, recedit squamis planis, tenuibus, aliter coloratis et sporsis minoribus et colore thalamii.

S.A. Ad terram sabulosam, Wa-wee Waterhole.

30. Thalloidima australiense, J. Müll., L.B., n. 1158.

W.A. Ad terram prope Warangering.

31. Catolechia glomerulans, J. Müller.

Thallus olivaceo-nigricans, squamulosus; squamulae parvae et glomeruloso-aggregatae, bullato crassae, ambitu obtuse lobulatae, totae adnatae; apothecia $\frac{1}{2}$ mm lata, sessilia, nigra, plana, opaca, tenuiter et vix prominenter marginata, dein immarginata; epithecium nigrofuscum, lamina fuscidula; hypothecium late obfuscatum, paraphyses conglutinatae; sporae in ascis angustis 8-nae, 2-loculares, 12—14 μ longae, 5—6 μ latae, ellipsoidae et obovoideae, utrinque late obtusae, media obsolete constrictae. Thallus primo intuitue globoso-crustaceo in glomerulosum disruptus videtur, at squamulae cujusvis pulvinuli in peripheria hinc inde distincte leviter lobatae sunt. Apothecia in quoque glomerulo plura.

Prope *C. badiam* (Fr.), J. Müll., Lich. Costar., No. 58, inserenda est.

W.A. Ad terram subulosam rubidam prope Warangering.

32. Catolechia subcoronata, J. Müller.

Thalli squamae olivaceo-albidae, adnatae, orbiculares et obtuse angulosae, sat confertae, planae, gibboso-inaequales et demum reticulatim insculptae, circ. 1—$1\frac{1}{2}$ mm. latae; apothecia nigra, circ. 1 mm. lata, erumpentia, margine thallino accessorio grosse dentato-coroniformi et mox evanescente cincta, demum convexa et immarginata, nuda et opaca; epithecium et hypothecium nigrofusca; sporae 8-nae, ellipsoideae, subbiscoctiformes, biloculares, 12—16 μ longae, 5—7 μ latae. Ad terram.

Prima fronte potius speciem *Thalloidimatis* simulans, sed sporae ut in *Buellia*.

S.A. Everard Range. W.A. Warangering.

33. Catolechia marginulata. J. Müller.

Thalli squamae laete glaucae, convexae, crassulae, 1—$1\frac{1}{2}$ mm. latae, nonnihil obtuse angulosae, ambitu linea albicante cinctae et superficie polito-laeves; apothecia nigra, copiosa, $\frac{1}{2}$—1 mm. lata, novella haud coronata, sessilia, semper tenuiter nigro-marginata; epithecium et hypothecium nigrofusca; sporae 8-nae, ellipsoideae, circ. 12 μ longae et 7 μ latae.

Affinis *C. subcoronatae*, sed sqamularum minorum et crassiorum et eleganter marginatarum superficies alia et apothecia juniora non coronata.

S.A. Ad saxa arenacea prope Everard Range.

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Trib. **Lecanoreae.**

34. Callopisma aurantiacum, Mass., Syn. L. Blasten, p. 9; saxicola.
S.A. Everard Range. W.A. Fraser Range.

34A. — — — var. granulare, J. Müll., L. Parag., n. 82.
W.A. Corticola, Fraser Range.

35. Lecanora subfusca, var. campestris, Schaer., Enum., p. 75; saxicola.
No locality.

36. Lecanora caesio-rubella, Ach. Univ., p. 366.
W.A. Corticola, Fraser Range.

37. Lecanora sphaerospora, J. Müller.

Thallus albidus, confertim v. sparsim glebuloso-areolatus; areolae irregulariter orbiculares, convexae, impresso-punctatae, gonidia globosa (vulgaria); apothecia in areolis solitaria iiscum primum, apothecia late albo marginata formantia, demum tenuiter albo-marginata; margo vix prominens, undulatus, intus linea tenui nigra zeorina haud emergente praeditus; discus planus, 1—1½ mm. latus, caesio-niger; epithecium nigrofuscum; hypothecium hyalinum; sporae in ascis 8-nae (semel 12 visae), vulgo biseriales, semper accurate globosae, diametro 6—8 μ acquantes.

Species forma sporarum insignita, habitu ad *L. sordidam*, Th. Fr., accedens et statu juniore fere *Lecanoram Hoffmanni* (sed albior) referens.

W.A. Saxicola, Victoria Desert et Fraser Range.

38. Lecanora calcarea, Smflt., var. caesio-alba; *Aspicilia contorta*, var. *caesio-alba*, Körb. Syst., p. 166.
W.A. Saxicola, Fraser Range.

39. Lecanora pallescens, Fr., Lich. Europ., p. 132.
W.A. Corticola, Fraser Range.

40. Rinodina Bischoffii Mass. Framm., p. 25.
W.A. Saxicola, Fraser Range.

41. Diploschistes scruposus, Norm., var. arenarius (Ach.). *Urceolaria scruposa* var. *arenaria*, Ach. in Schaer., Spicileg, p. 75.

W.A. Ad terram arenosam, in Fraser Range et in ejusdem vicinitate.

Trib. **Lecideeae.**

42. Blastenia ferruginea Massal. Syn. Lich. blasteniosp., p. 14.
W.A. Corticola, Fraser Range.

43. Lecidea planata, J. Müll., L.B., n. 1082; *L. plana*, Krplh Austral. n. 113 (non Lahm).
W.A. Ad terram prope Warangering.

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44. Lecidea (s. Sarcogyne) pruinosa, var. minuta; *Sarcogyne pruinosa* v. *minuta*, Mass. Sched. crit. n. 335.
W.A. Saxicola, Fraser Range.

45. Buellia tetrapla (Nyl.), J. Müll., L.B., n. 1312.
W.A. Corticola, Fraser Range.

46. Buellia inturgescens, J. Müller.
Thallus ochroleuco-albido, crassiusculus, diffracto-aroelatus; areolae primum confertae, planae, angulosae, dein subdistantes et turgido-convexae, laeves sed opaca, sessilia, $\frac{1}{2}$—$\frac{4}{3}$ mm lata, e plano et tenuiter marginato demum convexa et immarginata; epithecium caerulescenti-aut virenti-nigrum; hypothecia fuscum; sporae 8-nae, 9—11 μ longae et circ. 6 μ latae.
A proxima abyssinica *B. toninioide*, Bagl., recedit apotheciis magis superficialibus, nec ex immerso adpressis et epithecio non fusco.
S.A. Camp 14, on granite.

47. Buellia spuria (Schaer.), Körb. Par., p. 183.
Saxicola. S.A. Arcoeillinna;

48. Buellia subalbula, J. Müll., Lich. Aegypt., n. 49.
Lecidea subalbula, Nyl., Lich. Angol., p. 11 et Lich. Larbal, n. 12.
S.A. Calcicola, Everard Range. W.A. Fraser Range

49. Buellia stellulata (Tayl.), Mudd Man., p. 216.
Saxicola. W.A. Cavenagh Range.

50. Buellia desertorum, J. Müller.
Thallus argillaceo-fuscus, crebre et minute diffracto-areolatus, areolae subcontiguae, angulosae, planae, medio concaviusculae, vix apotheciis aequilatae; apothecia $\frac{1}{4}$—$\frac{1}{3}$ mm. lata, sessilia, juniore margine accessorio fugace pallido et tenuissimo mox evanescente praedita, demum alte convexa; epithecium et hypothecium fusca; sporae 8-nae, globoso-ellipsoideae, 7—9 μ longae et 6—7 μ latae, 2-loculares.
Juxta *B. fuscellam*, J. Müll, L.B. n. 1,438, locanda est, a qua jam apotheciis non adpressis mox elato-convexis et colore thalli differt.
W.A. Saxicola, Victoria Desert.

Trib. **Endopyrenieae.**

51. Endocarpon Helmsianum, J. Müller.
Thalli squamae fuscescenti-argillaceae, 5—13 mm. latae, suborbiculares, margine paullo angulosae aut leviter crenato-lobulatae, planae v. planiusculae, subundulato-inaequales, coriaceae, demum reticulato-insculptae, polycarpicae, subtus copiose et longe nigro-rhizinosae; perithecia innata, integre nigro-globosa, circ. $\frac{1}{3}$ mm. lata; ostiolum haud prominens, disculo orbiculari thallino fere $\frac{3}{10}$ mm. lato pallido-nigrescente centro pertuso et

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linea nigra circumscripto indicatum; sporae in ascis geminatæ, superpositae, fuscae, circ. 35—50 μ longae et 12—18 μ latae, ambitu valde ludentes, crebre parenchymatosae; gonidia thalli subglobosa, 6—9 μ lata, hymenialia valde copiosa, 4—8 μ longa, vulgo 2—3-plo longiora quam lata, cylindrico-ellipsoidea.

Est species insignis, robusta, macrocarpa, gonidiis hymenialibus oblongatis.

S.A. Ad terram, Birksgate Range.

52. Endopyrenium hepaticum, Körb., Par., p. 302.
No locality.

Trib. **Pyrenuleae.**

53. Verrucaria calciseda, Dc., Fl. Fr., p. 317.
W.A. Saxicola, Fraser Range.

Trib. **Leprariaceae.**

54. Lepra citrina, Schaer., Spicil., p. 2.
S.A. Corticola, Everard Range.

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FUNGI.

By Dr. M. C. COOKE.

Herbarium, Royal Gardens, Kew.

Polyporus sanguineus, *Meyer*.
S.A. Everard Range.
Fomes ramosus.
Trametes gusapatus, *B.*
Lenzites striata, *Fr.*
Polysaccum australe.
W.A. In sand, Victoria Desert (C. 58).
Geaster fimbriatus, *Fr.*
Geaster striatus, *D.C.*
W.A., Fraser Range.
Geaster Drummondi, *B.*
Podaxis carcimonalis, *Fr.*
Stephensia arenivaga, *Cooke* and *Masse*, "Grevillea," vol. XXI., No. 98, Dec., 1892.

Subglobose, irregular, or at length collapsed and cerebriform (4 to 6 c.m. diam.), pale, soft, becoming indurated, accumulating particles of sand, which become closely adherent; gleba soft, dirty-white, shrinking and becoming irregularly lacunose; asci clavate; sporidea 8, irregularly clustered globose, smooth, hyaline, 10 μ diameter.

S.A. On sandy soil, near Camp 9.

Diploderma sabulosum, *C.* and *M.*, op. cit.

Subglobose, 2-3 c.m. diam., pallid. External peridium thick, subgelatinous, collecting grains of sand, and becoming consolidated into a firm subglobose ball. Inner peridium membraneous, persistent, soon free within the outer hard shell, silvery white. Capillitium radiating, consisting of parallel fibres. Gleba dirty-white. Spores elliptical, smooth, 14 × 7 μ, pallid with a faint tinge of ochre.

W.A. On sandy soil, Victoria Desert.

CHARACEÆ.

By Dr. Nordstedt, of Lund.

Chara succincta, *Al. Braun.*
S.A. Cootanoorina.
Nitella cristata, *Al. Braun.*
W.A. Karoling.

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ORTHOPTERA.

By J. G. O. TEPPER, F.L.S.,

Entomological Curator, Public Museum, Adelaide.

The Orthoptera collected by Mr. R. Helms, the naturalist of the expedition represents most of the groups of the order, the collection comparing very favourably in number and species with even the richest of the other orders. Considering the difficulties the capture and preservation of these insects present, the collection is so far satisfactory, but the many new forms exhibited among the comparatively small number indicate that very much is still to be learned.

There have been and still are only a few specialists for the order even in the Old World, and none in Australia. Their works, moreover, are published in several languages and difficult to obtain, forming mostly parts of the transactions of scientific societies, and only obtainable at irregular opportunities. It has therefore been impossible for me to identify or recognise the greater number with the certainty desirable, and while of these only a general and approximate list can be given, several families have been examined exhaustively, and revealed a number of forms new to science, so far as I am able to judge. As the collection of the requisite literature proceeds, and my other duties permit, detailed descriptions will be drawn up and published in due course.

The 101 specimens placed in my hands comprise about 26 genera, and 30—40 species. Owing to the delicacy and brittleness of their organs, many suffered considerably during the long, rough transit, notwithstanding the great care taken by the collector.

Forficularia (Earwigs).

Not represented.

Blattodea (Cockroaches).

Apolita decorata, *Tepper*. Fraser Range. One larva.

Ischnoptera longiuscula, *Walk.* (?). Cootanoorina. Three adults.

Epilampra Fraseriana, *Tepper*. Fraser Range. Two adult males, and one female larva.

Polyzosteria pubescens, *Tepper*. Fraser Range. Three adult males and two larvæ.

Polyzosteria Mitchelli, *Angas*. Victoria Desert, &c. Ten specimens.

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Platyzosteria armata, *Tepper*. Fraser Range. One male, two females.

Platyzosteria albomarginata, *Brunner*. Barrow Range. One male.

Anamesia Lindsayi, *Tepper*. Everard Range. One male and female.

Pseudolampra punctata, *Tepper*. Between Victoria Spring and Fraser Range. One pair of adults and one larva.

Drymaplaneta obscuripes, *Tepper*. Fraser Range. One immature male.

Mantodea (Mantids).

Mantis sp. 1. Victoria Desert. One specimen. It resembles our common small green mantis, but is much smaller, &c.

Mantis sp. 2. Fraser Range. Two adults and one larva. It belongs to the type of *M. latistylis*, but different in many characters. It also occurs in other parts of South Australia. The native name is "Komvan," according to Mr. Helms.

Phasmodea (Stick-insects).

Podacanthus viridiroseus, *Cast.* Murchison. One female.

Podacanthus sp. Fraser Range. One male and four very young larvæ.

Lopaphus (?) sp. Fraser Range. One female.

Cyphocrania sp. Fraser Range. One female. Probably a dwarf form of *C. Pasymachus*, or closely allied.

Acridiodea (Common Locusts, antennæ short).

Choriphistes sp. Victoria Desert, Fraser Range. Two males, five females.

Cyrtacanthacris exacta, *Walker*. Same as last. Three adult specimens.

Tropinotus sp. Fraser Range. One male, two females, one nymph.

Eremobia (?) sp. Fraser and Barrier Ranges. Two adults and one nymph.

Rhomalea (?) sp. Victoria Desert. One pair of adults, of which the collector remarks, that the colour of their body so well harmonised with the rocks or ground they frequent, that it is difficult to detect them.

Pachytilus (Epacromia) sp. Everard Range. One female; a male from the Fraser Range appears to belong to the same species. Both are different from our common locust. According to the collector's note, the native name is "Yindilka."

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Dactylotum (?) sp. Mount Squires, &c. Four adults (three males, one female) and six larvæ, apparently belonging to the same species, which is found in the Mount Lofty Ranges, near Adelaide. They are referred provisionally to this genus, and may require a new genus for their reception.

Besides the above, there are 13 specimens of small sizes, and from the Fraser Range chiefly, which belong to several species, but which I cannot at present locate with any reliability, on account of the lack of the requisite literature. I also beg to point out that for the same reason the names given are only provisional, indicating the affinity of the repective insects, until by more critical study their true position can be defined. It is surmised that a fair proportion will prove new.

Locustodea (Longhorned Locusts).

A. PHANEROPTERIDÆ.

Dictyota Elderi, *Tepper*. Trans. Roy. Soc. S. Aust., XV., p. 99. Mount Squires. One male.

Taeniomena Fraseriensis, *Tepper*, op. cit., p. 108. Fraser Range. One male.

B. LOCUSTIDÆ.

Mecopoda (?) sp. Mount Squires. One female.

Saga (?) sp. Fraser Range. One female.

C. GRYLLACRIDÆ.

Paragryllacris deserta, *Tepper*, op. cit., p. 162. Cootanoorina. One adult male and three larvæ. Native name, "Billarbi" (*R. Helms*).

Ametrosomus Helmsi, *Tepper*, op. cit., p. 160. Blyth Hill and Barrow Ranges. Two adult males.

Gryllodea (Cricket-like Insects).

Schoenobates (?) sp. Fraser Range. One female. Quite unique in form, and probably new.

Among the Pseudo-Orthoptera (or Pseudo-Neuroptera) is a single Dragon Fly (*Agrionidæ*) and several species of Ant-lions (*Myrmelionidæ*). These, however, are reserved for critical study. When the requisite literature has been obtained they will be further reported on. It may, however, be remarked that the former appears to be identical with one of our common species, and the latter different from anything hitherto found in the settled part of the province.

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VERTEBRATA.

By E. C. STIRLING, M.A., M.D., C.M.Z.S., Hon. Director South Australian Museum, and A. ZIETZ, Assistant Director S.A. Museum.

[Plates VI. and VII.]

MAMMALIA.

The mammals collected by Mr. R. Helms are comparatively few in number, and represent only a few species, but the journey has added some interesting information respecting their distribution. The collection comprises twenty specimens, including one skull and two skeletons, and represents eight species.

Myrmecobius fasciatus, *Waterhouse.*

Everard Range. One dried skin.

Trichosurus vulpecula, *Kerr.*

One dried skin of this well-known and widely-distributed species from the Everard Range. A rufous tinge is particularly conspicuous on the scapular region and neck.

Lagorchestes hirsutus, *Gould.*

One old male (skin), one young, sex unknown (skin), and one young male taken from the pouch (in spirit). These were taken in the Porcupine grass *(Triodia irritans)* country, south of the Barrow Range, before the exploring party entered the Victoria Desert. Gould's type, of which he gives an excellent figure in his "Mammals of Australia" was obtained in Western Australia.

The following description refers to the largest male specimen, which has been mounted. It is apparently an adult:—

Rhinarium nearly wholly covered with gray hair, lips white. General colour above finely grizzled-grey, intermixed with rufous-brown, which is more conspicuous on the rump and on the outside and back of legs. The fur of the back is, for half its length next the skin, nearly black; a yellowish-brown-tinted area, around the eye, extends to root of ear; back of ears grizzled-grey, their insides and edges white. Arms, hands, front of legs and feet pale. Tail short-haired, black above and towards the point, grey on sides and root, its under-surface with short white glossy hair. Length of hindfeet four and a half inches, of tail ten inches, total length of specimen (stuffed) about thirteen

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inches. The tail, which is much laterally compressed, is pyriform in section, with the broad end uppermost, and has a distinct tendency to coil inwards for about its terminal half. This feature is very-well shown in the youngest specimen preserved in spirit. The larger male has much resemblance, in general appearance, to a female specimen of *L. leporoides* in the S.A. Museum. Both specimens are about of equal size, but *L. leporoides* has a more nearly uniformly light-coloured tail and proportionally longer hindfeet. The longer and more slender tail of *L. hirsutus* is conspicuously dark and the hindfeet are fully an inch shorter. The skulls of both specimens show no marked differences. The younger skin of an individual rather more than half-grown (mounted) has the skin injured in such a way that the sex cannot be distinguished. It has the brown zone round the eye prolonged to the sides of the muzzle.

Mr. Streich informs us that this animal appears to be numerous in the northern parts of the Victoria Desert, where it often falls the prey to the Wedge-tailed eagle.

ONYCHOGALE LUNATA, *Gould.*

A young male from the Everard Range.

The white mark behind the base of the forelimb is not nearly so distinct as is shown in Gould's figure. A female collected on the transcontinental journey of His Excellency the Governor, the Earl of Kintore, has apparently a proportionally longer tail, but it is possible that this is owing to a deficiency of the tip in the former case.

PETROGALE LATERALIS, *Gould.*

Male, female and young (taken from the pouch) obtained at, or near, the Barrow Range.

These specimens are more conspicuously marked than others which were collected by Dr. Stirling in the neighbourhood of Alice Springs in 1891. The dark-brown markings are of a deeper tinge, but the whitish or yellowish markings more faintly shown. Beyond these we are unable to detect any other differences which would justify a specific separation of these specimens from those collected at Alice Springs. It seems to have a wide range in the mountainous or rocky districts of the interior. Those in the British Museum were collected on the N.W. coast and Swan River District, W.A.

MACROPUS ROBUSTUS, *Gould.*

One skull, Victoria Desert.

HAPALOTIS MITCHELLI.

Three immature specimens, Fraser Range. This species has a wide range in the interior of Australia.

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Mus albocinereus (?), *Gould.*

A small species of *Mus* from the Murchison District.

Tail, 3·72 inch; head and body, 3·25 inch. The fur has a brownish-grey tinge, the under-surface lighter coloured, feet and lips whitish.

It agrees approximately with the description of *M. albocinereus*, Gould; but in the present imperfect knowledge of the Australian representatives of this group we cannot confidently affirm that this specimen belongs to that species.

AVES.

This series consists of eighteen skins, two skeletons, eight nests and sixteen eggs.

We have throughout adopted the nomenclature of Dr. Ramsay's "Tabular List of Australian Birds."

Aquila audax, *Lath.*

Victoria Desert. One specimen, apparently an old female. Above and below, blackish-brown; neck rufous, under tail-coverts of a rusty tinge; median wing and upper tail-coverts yellowish-brown. Each feather is shaded with dark-brown in the centre.

Two eggs (taken from the same nest in a Bloodwood-tree (*Eucalyptus tessellaris*) between Camps 23 and 24 (Blyth Range) show the usual markings of this species. One is smaller and also much lighter-coloured than the other.

Aquila morphnoides, *Gould*

One egg, which we refer to this species, was taken at Mt. Squires from a nest built in a Eucalyptus-tree. The bird was not seen at the time.

Hieracidea berigora, *V.* and *H.*

Three males (Barrow Range), and one female (Cavenagh Range). These birds correspond most nearly with Mr. Sharpe's description of the species in the British Museum Catalogue.

Hieracidea orientalis, Schlegel. One female. Murchison District. This specimen answers most nearly to the species described under this name in the British Museum Catalogue. In the South Australian Museum is the skin of a female shot in the neighbourhood of Lake Albert, which conforms to the description of *H. berigora*, while two of its young, taken from the nest at the same time and kept until six months old, agree in all essential particulars with the description of the young of *H. orientalis*. From this fact, and from careful inspection of a large series of birds from various localities which approximately answer to the descriptions either of *H. berigora* or of *H. orientalis*, it is

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evident that both these alleged species are subject to considerable colour-variations; and we have been unable, after careful examination and measurements, to detect any such differences as should entitle them to be ranked as distinct. We, therefore, consider that Schlegel's *H. orientalis* is merely a variety of *H. berigora*, into which latter, as the type of the genus, the former should be merged. We can, further, detect no difference between eggs in the South Australian collection which are ascribed respectively to the two species.

A nest of *Hieracidea*, sp., was found upon the burnt trunk of a tree, about three feet from the ground, in the Victoria Desert (Camp 57).

CHERAMŒCA LEUCOSTERNA, *Gould.*

Camp 9. One specimen.

OREOICA CRISTATA, *Lewin.*

Barrow Range. One male which conforms with Gould's description.

Oreoica sp.—A second male specimen of *Oreoica*, considered by Mr. Helms to differ from *O. cristata*, because the blacks of the Barrow Range district distinguish it by a separate name, is possibly the same bird in its immature plumage, but as the specimen previously referred to and a female of the same species from Mildura (Victoria) are all we have for comparison, it would be unsafe at present to declare the bird under consideration to be a distinct species. This specimen has the base of the beak light-brown. Both specimens from the Barrow Range appear to have the beak proportionally stronger and wider vertically than the Mildura-specimen.

The black markings on the head and breast, and also the white face, are very faintly indicated by darker and lighter shades of brown. The crown of the head, which in the male specimen of *O. cristata* is deep black, is in this specimen very faintly marked and mixed with grey. The greyish tinge of the neck gradually changes into fawn-colour towards the rump, and the latter tint is more vivid on the upper- and under tail-coverts. Under surface and sides fawn-coloured, the latter being the darker. Feathers of the upper surface, wing and tail brownish, margined with fawn-colour.

CHLAMYDODERA GUTTATA, *Gould.*

Three beautiful male specimens of this species, which apparently is still rare in Museums, were collected in the Barrow Range. They agree with *C. maculata* in respect of size, but the colourings are far more vivid.

Mr. Helms informed us that this bird is not uncommon in the locality mentioned.

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Epthianura tricolor, *Gould.*

A male bird and a nest containing two eggs which, according to Mr. R. Helms, had undergone a week's incubation, were collected near Arceoillinna Well, S.A.

A second nest, also containing two eggs, was found near Camp 1 (Everard Range).

Both are composed of fine grass-stems, rootlets, and the silky-white stems and leaves of some "everlasting."

Epthianura aurifrons, *Gould.*

A nest containing three eggs was obtained near Arkaringa Creek, S.A.; it was found in the midst of a small saltbush.

The description of the bird seen near the nest by Mr. Helms undoubtedly refers it to this species. The nest is composed of fine grass-stems, rootlets, and dried yellow flowers.

Cinclosoma castaneonotum, *Gould.*

One male bird in spirit, nest and one egg. With regard to these specimens Mr. Helms notes that the nest was found in the Victoria Desert in Spinifex *(Triodia irritans)*, by Mr. D. Lindsay. It contained one egg only, which was in an advanced stage of incubation. Mr. Lindsay asserts that the nest is made by this bird. Two other eggs were obtained near the Everard Range, but they were too decomposed for preservation.

The egg taken from the above-mentioned nest is much more elongated than two others which will be mentioned in the next paragraph. It is also much more minutely punctated, but bears undoubtedly the character of a "Cinclosoma" egg.

A second nest and two eggs, which apparently belong to this species, are accompanied by the following note from the collector:—"The nest and two eggs were found during a flying trip about thirty miles south of Camp I., Everard Range. Unfortunately, the structure of the nest was such as to prevent my being able to preserve it intact, in the circumstances under which we travelled on that occasion, although I took the greatest pains to do so. It was found at the base of a low bush, of the bark of which it is constructed. The bird itself I did not see, but the natives told me their name for it was *milka*. On seeing the egg they said, '*Milka nokum*,' *nokum* being egg."

The remains of the nest consist of narrow strips of bark, and it was evidently constructed on the same plan as that of *C. punctatum*, which, according to Mr. North, is also a rather-loosely built structure composed of fine strips of bark, grass, and leaves.

One of the eggs (A) is bluish-white, freckled with sepia-brown markings intermingled with others of a bluish-grey, which latter

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appear as if underneath the surface of the shell; some of these markings are large, others very minute.

The second egg (B) is creamy-white, but the markings are much larger, especially towards the larger end.

Dimensions.—(A) 1·19 x 0·81 inch; (B) 1·18 x 0·67 inch.

CACATUA ROSEICAPILLA, *Vieillot.*

Barrow Range; two specimens.

REPTILIA.

ORDER LACERTILIA.

The large number of one hundred and sixteen specimens, representing thirty-seven species, proves the abundance of this class of animal life in the arid regions of Australia traversed by the Expedition and also indicates the zeal and energy of the collector under the peculiarly difficult circumstances of Australian exploration.

Five species of this order have been hitherto undescribed; of these four were collected for the first time by the Elder Expedition and a full description of them is here given. One species having been previously collected by Dr. Stirling on the occasion of His Excellency's transcontinental journey, its description is reserved for the zoological report of that expedition shortly to be published.

The classification and details of measurement are those adopted by Boulenger in the "Catalogue of Lizards in the British Museum Collection."

The following families are represented:—Geckonidæ, 8 species; Pygopodidæ, 3 species; Agamidæ, 10 species; Varanidæ, 2 species; Scincidæ, 14 species.

Family GECKONIDÆ.

NEPHRURUS PLATYURUS, *Boul.*

One specimen taken at Victoria Springs and two others between the Everard and Fraser Ranges; found under tussocks of Spinifex grass *(Triodia irritans).*

Total length of the largest specimen	88 mm.	
Head	23 "	
Body	50 "	
Tail	15 "	(reproduced)
With of head	20 "	
Length of forelimb	29 "	
Length of hindlimb	36 "	

The locality, Adelaide, as stated in the "British Museum Catalogue," is incorrect; this species inhabits the dry waterless country of the interior of the Australian Continent.

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RHYNCHŒDURA ORNATA, *Günther.*

Native name, "Piur."

Two specimens of this little-known lizard from the Everard Range.

Total length	...	...	...	...	86 mm.
Head	...	...	...	...	9 "
Body	...	...	...	...	43 "
Tail	...	...	...	...	34 "
Width of head	...	...	...	...	8 "
Length of forelimb		...	...	...	16 "
Length of hindlimb		...	...	...	19 "

Ground-colour reddish-brown, largely and irregularly reticulated with blackish-brown and marked with large round whitish spots, of which the larger ones, of about 2 mm. diameter, form two lateral rows In one specimen these spots form seven curved lines on the back with the concavity towards the head; in the other these spots are not so regularly arranged. Upper part of the head of a ground-colour, similar to that of the body. A row of three to four white spots commencing midway between the nostril shields extends backwards as a median line to midway between the eyes. Upper eyelid dark, but very distinctly marked with white in front of the eye. The tip of the beak-like snout is white. A blackish curved band extends across the occiput. Underside cream-coloured, without any markings. The two specimens from which this description has been compiled were fresh, and well-preserved in spirit, but one had lost its tail.

GYMNODACTYLUS MILIUSII, *Bory.*

Between Fraser Range and Southern Cross. November, 1891.

Only one specimen of this common and widely-distributed species was collected. It has a total length of about 60 mm.

HETERONOTA BYNOEI, *Gray.*

Two specimens collected; one at or near the Barrow Range, the other between the Fraser Range and Southern Cross (Yilgarn). The former is an immature specimen, the second of about 100 mm. total length. This species has a wide range.

DIPLODACTYLUS SPINIGERUS, *Gray.*

Native name, "Yed."

Fraser Range; three specimens.

Total length of largest specimen, 90 mm.

DIPLODACTYLUS TESSELLATUS, *Günther.*

Everard Range; two specimens.

A patch of curved conical spines on each side at the root o

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the tail, their length being in one specimen about 1 mm., in the other the spines are only half this length. Fourteen pairs of enlarged tubercles on the dorsal surface of the tail. Between the rings bearing these large tubercles are rings with generally three to four rows of smaller tubercles, which are equal in size to those on the dorsum. The second specimen has similar rings of tubercles on the tail, which latter, however, appears to have been reproduced. This is the first time that a specific locality has been assigned to this species.

DIPLODACTYLUS ELDERI, *spec. nov.* Pl. VI., figs. 1 and 1*a*.

Barrow Range; one specimen.

Head oviform, convex; snout rounded, a little longer than the distance between the eye and ear-opening, and more than once and a-half the diameter of the orbit; ear-opening minute, oblong, vertical, 1 mm. long. Body moderately elongate, depressed. Limbs moderate; digits much depressed, with large transverse lamellæ inferiorly, five being under the fourth toe, of which the distal is incised and cordiform.

Colour.—Brownish-grey above, covered with small smooth granules, intermixed with larger ones of different sizes, which are very white and glossy; these form the centre of black annuli, which are sometimes confluent and arranged in very irregular disposed oblique or transverse rows; on the sides of the body they are more scattered, and become smaller on the limbs. Under-surface light-coloured; on the belly large whitish spots form two median and two lateral longitudinal rows. Tail short, pyriform.

Total length	65 mm.
Head	13 "
Body	38 "
Tail	14 "
Width of head	10 "
Length of forelimb	17 "
Length of hindlimb	18 "

GEHYRA VARIEGATA, *Dum. & Bibr.*

This widely-distributed species was obtained at the following localities:—Two specimens, Barrow Range, one of 110 mm. total length, very light-coloured and indistinctly marbled with darker shades; the second (97 mm.) dark grey, variegated with darker shades. One immature specimen (55 mm.), between Barrow and Everard Ranges. One specimen (85 mm.), Fraser Range, with irregular dark bands across the back. One immature specimen (56 mm.) from Queen Victoria Springs, light greyish, variegated with darker shades; small white spots scattered over the head,

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each corresponding to three or four tubercles. One immature specimen (62 mm.) with a dark streak crossing each eye and continuing to about the middle of the back.

Fam. PYGOPODIDÆ.

PYGOPUS LEPIDOPUS, *Lacep.*

One specimen of this well-known lizard from the country between the Queen Victoria Springs and Fraser Range has the following measurements :—

Total length	260 mm.
Head	13 "
Body	85 "
Tail	162 "
Width of head	7 "
Length of hindlimb	4 "

Slate-coloured with three dorsal longitudinal rows of elongated blackish spots ; throat uniformly salmon-coloured without markings.

The second specimen, a female (with well-developed ova), taken at Yilgarn, is uniformly slate-coloured on the dorsal aspect and pinkish below. A number of indistinct darker vertical streaks slanting forwards on each side of the anterior part of the body, gradually disappearing towards its middle.

DELMA IMPAR, *Fisch.*

One specimen found under "Spinifex" near Everard Range.

Total length	265 mm.
Head	10 "
Body	55 "
Tail	200 "
Width of head	5 "
Length of hindlimb	3 "

Dark olive green on the back and head, the sides of the body and under-surface white. Each scale of the back and sides of the body has a dark centre, thus forming fourteen dark longitudinal lines. Ventral scales with dark spots in the centre. A second specimen of the same size and with similar markings was obtained in the Barrow Range.

LIALIS BURTONI, *Gray.*

Two specimens ; 30 miles south of Camp. 1, Everard Range. One specimen approaches most nearly to Boulenger's Var. D. of this species.

Length of body	95 mm
Head	8 "
Tail	? (incomplete).

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Length of snout about equal to distance from eye to ear-opening. Upper-surface slate-coloured; a vertebral line and two lateral lines of a darker shade. The dark vertebral line divides into two separate lines on the neck, which unite again at about two-thirds of the distance between the eyes and tip of the snout. A white labial band is prolonged along the sides of the body; this band is bordered on each side by minute white spots. Under-surface light grey; a white line along the middle of the throat, which bifurcates at about 20 mm. distance from snout, and the two branches extend over the tail.

The measurements of the second specimen are as follows:—

Total length	303 mm.
Length of body	177 "
Head	23 "
Tail	103 "

The ground-colour of the upper-surface is dark-grey, minutely punctated with brown; three dark-brown lines along the back; under-surface with white spots, which are margined with a brick-red colour. Length of snout equal to distance from eye to ear-opening.

Fam. AGAMIDÆ.

AMPHIBOLURUS MACULATUS, *Gray*.

Three specimens—two apparently adult and one young—of this beautiful lizard were obtained in the Barrow Ranges, and a fourth in the Victoria Desert near Queen Victoria Springs.

All these agree with Boulenger's description except in respect of their markings, which are as follows:—Above brick-red with a series of small bluish-grey spots along the vertebral line. The lateral lines are composed of similar spots, which are partly confluent. Four bluish-grey lines mark the upper-surface of the anterior third of the base of the tail; the two median then becoming confluent, three lines are continued to the tip. The remainder of the tail, sides of body, head, throat as well as a large patch, which covers most of the under-surface and the inner-surface of the hindlimbs are deep-black, but a narrow yellowish uncoloured streak on each side of the body is left, which connects the forelimbs with the hindlimbs. The remainder of the under-surface as well as the lips are yellowish-white.

	Sp. A.	Sp. B.
Total length	163 mm.	175 mm.
Head	15 "	15 "
Body	36 "	40 "
Tail	112 "	124 "
Width of head	12 "	12 "
Length of forelimb ...	24 "	24 "
Length of hindlimb ...	48 "	48 "

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The Λ shaped black mark on the throat to which Boulenger refers to in his description is not traceable in our specimens; but as we have seen it absent also in specimens of *Amphibolurus Adelaidensis* (the whole throat being sometimes uniformly black), we have no doubt that this feature is subject to great variation. The third specimen (the young one) has dark mottling on the the throat only.

AMPHIBOLURUS RUFESCENS, *sp. nov.* Pl. VI., figs. 2 and 2a.

Three specimens. Mount Sir Thomas, Birksgate Range, S.A.

General Aspect.—Body proportionally short, head moderately large, snout as long as the diameter of the eye-opening. Nostrils situated below the canthus rostralis, and directed upwards, nearer the eye than the end of the snout. Upper head-scales large, strongly keeled, largest towards the snout and on the canthus rostralis, smallest on supra-orbital region, but gradually decreasing in size towards the neck. Sides of neck plicated. A low nuchal crest. Gular scales small, about half the size of the ventrals; these are very slight and obtusely keeled. Scales on sides of body small, but increasing in size towards the vertebral line. The scales on tail and upper-side of limbs are large and strongly keeled, and on the middle line of the upper-surface of the tail are intermixed with a few larger ones. Limbs and digits proportionally long, the adpressed hindlimb reaching almost to the tip of snout. Fifty-eight femoral and anal pores form on each thigh an uninterrupted line; the series of each side separated in the præ-anal region. Tail slender, tapering very gradually towards its point.

Colour.—Above, rusty-brown, with dark spots more or less regularly arranged in pairs along the vertebral line; each pair sometimes confluent. A similar single series of dark spots corresponding with the lateral line. Under-surface dirty yellowish-white; chest olive. Throat and gular region with irregularly disposed dark markings on a cream ground-colour, being most distinct in the two smaller specimens.

	Sp. A.	Sp. B.
Total length	228 mm.	210 mm.
Head	22 "	17 "
Body	66 "	47 "
Tail (injured)	140 "	146 "
Width of head	18 "	14 "
Length of forelimb ...	35 "	33 "
Length of hindlimb ...	78 "	60 "

AMPHIBOLURUS CRISTATUS, *Gray.*

Between Queen Victoria Springs and Fraser Range; one specimen.

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General Aspect.—Slender. Head moderately large; snout as long as the diameter of the orbit, with subangular canthus rostralis; nostrils below the canthus rostralis, a little nearer the eye than the end of the snout; tympanum large, its width a little less than the eye-opening. Upper head-scales large, subequal, rugose and strongly keeled; they are largest towards the snout and on the canthus rostralis, smallest above the orbit. Neck long, its sides strongly plicated and spinose; nuchal crest well-developed, composed of separate compressed spines. The dorso-lateral fold with spine-like scales, which are largest on each side of the neck; a serrated ridge or crest along the back extending to about the first-third of the tail. Body much laterally compressed, covered above with small keeled scales, which are larger and most carinate on the middle of the back, and more minute on the sides; much larger isolated scales intervening. Ventral scales small, smooth or very slightly keeled. Limbs and digits very long, the adpressed hindlimb reaching beyond the tip of the snout; the length of the foot equal to the length of the rest of the forelimb; scales similar to those on the back. A series of seventy pores extending along the whole length of the thighs, uninterrupted in the præ-anal region. Tail very slender, laterally compressed, more than twice as long as head and body; caudal scales equal, keeled, a few larger ones at the base of the tail.

Colour.—Dark olive above, head and neck marked with much ochraceous-yellow. Tail with alternately dark and light annuli. Under-surface yellowish, median parts of the throat, chest and inner-surfaces of limbs black.

Total length	... ...	340 mm.
Head	... ...	22 "
Body	... ...	83 "
Tail	... ...	235 "
Width of head	... ...	20 "
Length of forelimb	... ...	40 "
Length of hindlimb	... ...	98 "

AMPHIBOLURUS SCUTULATUS, *sp. nov.* Pl. VII., figs. 1 and 2.

Between Fraser Range and Queen Victoria Springs.

Of this species we have several specimens of each sex. At the first glance it much resembles *Amphibolurus cristatus*, but differs in the following respects:—

All the scales are much smaller, the head-scales not rugose as in *A. cristatus*, but smooth and strongly keeled. The dorsal scales are not intermixed with larger ones, but increase in size towards the vertebral line. The compressed spines of the nuchal

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crest are shorter. The male specimens in this series are generally larger than the females.

Male.—Upper surface of a pale rusty-brown ground-colour, intermixed with ashen-grey, which in some specimens forms four to five indistinct transverse bands across the back for its whole length. Middle of throat, chest and under-surface of limbs black. A lanceolate black gular mark is not confluent with the black shading of the chest. On each side of the vertebral region extends a continuous lozenge-pattern marked out in pale reddish-brown, each lozenge containing darker markings in the centre. In other instances the elements of the pattern are not continuous and of a rounded shape approximating to ocelli. Neck marked with two to four fairly regular alternate bands of dark yellowish-brown, which in some specimens extend along the back, where they disappear. Sides with irregular dark-brown or black markings disposed on a ground of yellow or yellowish-brown, the dorsal ashen-grey stripes also extending into this region.

Limbs and tail dark rusty-brown, transversely crossed with indistinct paler bands. Under-surface yellowish. In *A. scutulatus* the chest marking is more elongated, and extends as far as the junction of the hindlimbs. Under-surface of the tail uniformly light-coloured. The male with fifty præ-anal and femoral pores, forming an uninterrupted series on each side, absent in the female.

Total length	325 mm.
Head	25 "
Body	75 "
Tail	225 "
Width of head	18 "
Length of forelimb	40 "
Length of hindlimb	80 "

Female.—Very similar in markings to the male, but in most specimens the chain of lozenge-shaped lateral markings is broken up into a series of light-edged ocelli; these are generally irregularly roundish or oval and often confluent; in some specimens they assume the shape of a series of figures of 8. Under-surface uniformly light-coloured, the black markings on throat and chest very faint or, on the latter, totally absent.

Total length	170 mm.
Head	20 "
Body	60 "
Tail	90 "
Width of head	—
Length of forelimb	32 "
Length of hindlimb	73 "

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No femoral and anal pores.

Most of the above specimens of this very agile lizard, which lives in sandy places, were caught by the blacks, who kill them with a wooden missile called a waddy.

Amphibolurus pictus, *Peters.*

Three specimens; between Fraser Range and Southern Cross, and between Fraser Range and Victoria Springs.

Specimen A (total length)	...	...	170 mm.
Specimen B " "	...	...	150 "

Ground-colour of back reddish-brown; a light-coloured vertebral line from neck to root of tail; the back with black and whitish spots, which form alternate irregular cross-bars; tail whitish with irregular broad transverse bands. Under-surface cream-coloured, specimen A having the median part of the throat and chest blackish; specimen B without any markings. Sp. A with an uninterrupted series of femoral pores, which are absent in sp. B.

The third specimen, viz., that from the country between Queen Victoria Spring and Fraser Range, greatly resembles sp. B in size and colour.

Amphibolurus reticulatus, *Gray.*

Four specimens; near Queen Victoria Spring.

General aspect, stout. Head very short. Nostril piercing the canthus rostralis and directed upwards; canthus rostralis blunt. A low nuchal crest indicated by about eight or nine large conical spines. The enlarged, flat, obtusely-keeled scales which are scattered over the back are whitish and arranged in groups, three or four scales generally forming the centre of a light brownish-coloured spot; these spots are enclosed by a blackish reticulation. The specimens agree in all essential details with the description of this species given by Boulenger, but differ in possessing a smaller number of præ-anal and femoral pores, and having the ventral scales feebly keeled.

Sp. A. Total length, 115 mm.; tail injured; number of pores not ascertainable on account of bad preservation.

Sp. B. Total length, 110 mm.; twenty præ-anal and femoral pores.

Sp. C. Total length, 138 mm.; twenty præ-anal and femoral pores.

Sp. D. Total length, 135 mm.; twenty-eight præ-anal and femoral pores.

The number of pores, as stated by Boulenger, in the British Museum specimens are from thirty-five to forty-five.

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Amphibolurus Adelaidensis, *Gray*.

Two specimens. Between Queen Victoria Spring and Fraser Range.

Adult.—Olive-grey above, with a regular series of dark-brown angular spots on each side of the vertebral region and another series, more or less regular, along each side between fore- and hind-limb. Head rufous, with symmetrical dark markings; limbs with irregular cross bars; tail with two longitudinal series of black spots; under-surface light-coloured, conspicuously marbled with darker tints.

Young.—Pale olive-grey above, with the same darker markings as in the adult.

The following are the measurements of the larger specimen:—

Total length	120 mm.
Head	15 "
Body	35 "
Tail	70 "
Width of head	11 "
Length of forelimb	20 "
Length of hindlimb	30 "

Amphibolurus barbatus, *Cuvier*.

This common Australian lizard was collected at the following localities:—Between the Barrow and Everard Ranges; between Everard and Fraser Ranges; between Fraser Range and Southern Cross (Yilgarn); and near the Queen Victoria Springs.

Specimens from the last-named locality are the largest, measuring 300 mm. total length. The colouring is as follows:—Of a uniform dark olive above, the smaller specimens with an ochraceous-yellow band across the head between eye and ear; in one specimen the front of the head is yellow, tail with yellow cross-bars. Under-surface light-coloured; in some specimens the throat is black.

Tympanocryptis lineatus, *Peters*.

Farina. Three specimens.

Tympanocryptis cephalus, *Günther*.

Two specimens of similar size, from outward appearance male and female; from the Murchison District, in plain-country, consisting of reddish clay soil, with scattered fragments of ferrugineous sandstone.

Nostril much nearer the eye than the tip of the snout, upper head-scales large, not so strongly keeled as in *T. lineatus*; large flat tubercles on the occiput; dorsal scales rather feebly keeled; the larger ones mucronate and forming irregular transverse

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series, these give the back a wrinkled appearance. Two præanal pores. Colour rusty-brown above, with several indistinct cross-bands, the one across the neck being darkest; sides of body blackish. Tail with dark broad bars.

The following measurements refer to both specimens: —

Total length	140 mm.
Head	18 "
Body	47 "
Tail	85 "
Width of head	16 "
Length of forelimb	29 "
Length of hindlimb	40 "

PHYSIGNATHUS LONGIROSTRIS, *Boulenger.*

One specimen, Murchison District.

Total length	351 mm.
Head	26 "
Body	60 "
Tail	265 "
Width of head	13 "
Length of forelimb	32 "
Length of hindlimb	70 "

Mr. Helms informs us that he had a second specimen, about thrice the size of the above, which perished from want of preserving material.

Mr. Boulenger records Nickol and Champion Bays, N.W. Australia, as the localities where the types in the British Mus. Coll. were found.

MOLOCH HORRIDUS, *Gray.*

This lizard was collected by the Expedition at the following localities:—

Arkaringa Creek (one).

Near Everard Range (one).

Near the Barrow Range (two).

A number of ova (laid in confinement) Fraser Range.

Family VARANIDÆ.

VARANUS GOULDII, *Gray.*

Two specimens; Fraser Range.

Dark brown above, with yellow annuli which form about fourteen rows across the back and sides of the body; yellow bars across limbs, toes and tail, those on the limbs interrupted; temple with two yellow streaks separated by a black band, these streaks extend distinctly along the sides of the neck. Lower surface yellowish, with small blackish spots. Throat with an angular

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lambdoid blackish mark. Lower jaw light-coloured. The terminal third of the tail is light-coloured, without any markings.

The second specimen is smaller, and has rows of round yellow spots across the limbs. The length of the neck (13 cm.) given in Boulenger's description seems to be disproportionate to the length of the head (8 cm.). Possibly his measurements were taken from skins or mounted specimens, as we have found a similar discrepancy in our stuffed specimens as compared with those in a fresh state or preserved in spirits, of which we have measured a large number.

Total length	41·5	centim.
Head	5	"
Neck	5	"
Body	19	"
Tail	48	"
Length of forelimb	7·5	"
Length of hindlimb	12	"

VARANUS PUNCTATUS, *Gray*.

One male specimen; Fraser Range.

The length of the neck nearly equal to the length of the head. A tuft of spines on each side of the base of the tail. Above, nearly black, with narrow yellowish reticulated lines on the trunk, which gradually disappear towards the neck, but these are most distinct towards the root of the tail. Limbs minutely punctated with yellow; root of tail with a few narrow yellowish annuli. Under-surface greyish, mottled with yellow and black. Throat, chest and under-surface of tail uniformly black.

Total length	71·5	centim.
Head	5	"
Neck	4·5	"
Body	18	"
Tail	44	"
Length of forelimb	7	"
Length of hindlimb	9·9	"

Family SCINCIDÆ.

EGERNIA WHITEI, *Lacép*.

One specimen. Between Fraser Range and Queen Victoria Spring.

Above, olive-brown with two black dorsal bands, each of them with a series of small whitish spots; sides of body salmon-coloured. Under-surface pale, with olive tinge; throat partly bluish, with black markings. Total length, 200 mm.

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EGERNIA KINTOREI, *sp. nov.*

One very large specimen of this beautiful lizard is from the northern part of the Victoria Desert, south of Barrow Range a second small immature specimen from the Fraser Range and a third, also a young one, from between the Fraser Range and the Queen Victoria Spring.

A full description of this new species, which we have named in honour of His Excellency the Governor, the Earl of Kintore, will be given in a detailed report upon the zoological results of His Excellency's transcontinental journey, on which occasion it was first found by Dr. Stirling. Largest specimen :—

Total length	360 mm.
Head	35 "
Body	150 "
Tail	175 "
Width of head	30 "
Length of forelimb	55 "
Length of hindlimb	60 "

In the largest specimen the colour is a light reddish-brown above, with dark markings; under-surface bright lemon-coloured; but the latter tint has now faded from immersion in spirit. This specimen was found in the possession of a young black girl, who was left behind by the tribe on the approach of the Expedition. The two smaller specimens have a total length respectively of 145 and 160 mm.

EGERNIA DEPRESSA, *Günther.*

One male and two females of this apparently little-known lizard were obtained in the Murchison River District, having been found in hollow logs. One of the females contained a fully developed young of about 50 mm. total length in each oviduct. All these specimens accord with Boulenger's description. Colour olive-brown above, with irregular cross bands; those on the neck are reddish-brown, on the tail black, edged with light yellow. Measurements of largest specimen :—

Total length	130 mm.
Head	23 "
Body	67 "
Tail	40 "
Width of head	17 "
Length of forelimb	25 "
Length of hindlimb	30 "

EGERNIA STRIOLATA, *Peters.*

Two specimens; between Fraser Range and Southern Cross.

These agree in all essential respects with the description given in Boulenger's Catalogue.

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The number of labials are respectively seven and eight in the two specimens; one has the fourth, the other the fifth right upper labial shield subdivided. Thirty-two scales round the middle of the body; dorsals largest, tri- or quadri-carinate (not quinquecarinate, as stated to be the case in the British Museum specimens). Total length, 170 mm. (the tail having been reproduced). Above, dark slate-coloured, with the neck rufous, tail olive. Some of the dorsal scales have a dark central spot. Under-surface salmon coloured, throat bluish.

TRACHYSAURUS RUGOSUS, *Gray*.

Four specimens; between Fraser Range and Hampton Plains. The largest specimen 340 mm., total length. Above jet-black, marked with a few bright sulphur-yellow and brick-red spots on the back and limbs. Head, with the exception of the parietals, bright brick-red. Under-surface black, with large yellow spots.

TILIQUA OCCIPITALIS, *Peters*.

Three specimens, Fraser Range; the largest 400 mm., total length.

LYGOSOMA LEÆ, *Boul*.

One specimen from the Barrow Range. This differs somewhat from Boulenger's description, but from a single specimen, and in the absence of comparison with the type-specimen, we cannot positively state whether it is referable to this species or not. The differential characters are 24 scales round body, no præ-anal pores present, and instead of the six white longitudinal lines on the back in the British Museum type-specimen, our specimen has eight lines of a greenish tinge.

Total length	160 mm.
Head	15 "
Body	42 "
Tail	103 "
Width of head	8 "
Length of forelimb	16 "
Length of hindlimb	30 "

LYGOSOMA FISHERI, *Boul*.

Seven specimens; Barrow and Everard Ranges.

At the first glance these closely resemble the common variety of *Lygosoma Lesuerii*. The white edges of the black dorsal bands are wide, and the row of small light spots on each side of the dorsal line, which are usually present in *Lygosoma Fisheri*, are, in the above specimens, totally absent. Five upper anterior labials, the sixth being below the eye.

Two young ones, obtained between the Everard and Barrow

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Ranges, have these spots fused, forming two additional pale narrow longitudinal lines on each side of the back.

Total length	200 mm.
Head	15 "
Body	62 "
Tail	123 "
Width of head	18 "
Length of forelimb	18 "
Length of hindlimb	33 "

LYGOSOMA MONOTROPIS, *Boul.*

One specimen; found in a dry well at Yardanie, between Fraser Range and Yilgarn.

Light-brown above, with nine dark-brown, broad, transverse bands between the head and base of tail; the latter having nine bands, but the reproduced portion is not banded. The interparietal shield presents a very marked external indication of a pineal eye appearing as a white spot.

Total length	160 mm.
Head	23 "
Body	60 "
Tail	77 "
Width of head	12 "
Length of forelimb	23 "
Length of hindlimb	32 "

LYGOSOMA MELANOPS, *spec. nov.* Pl. VI., figs. 3 and 3*a*.

Two specimens; between the Everard and Barrow Ranges.

This species is closely allied to *Lygosoma branchiale*, with which it agrees in many respects, but the distance between the end of the snout and the forelimb is contained nearly twice and a-half times in the distance between the axilla and groin instead of once and three-fourths to twice as in *L. branchiale*. Body much elongate. The three large vertical spots on each side of the neck in *L. branchiale* are absent.

Colour.—Olive above; rows of black dots descend from the sides of the head to the throat; alternate scales of the trunk marked with a black spot or short streak; on the neck-scales the spots are absent, on the tail they are sometimes double. Under-surface pale straw-coloured, with the scales similarly spotted.

Young, like the adult, but every third or fourth shield having a large white spot. Face, upper and lower lips blackish, but not so dark as in the adult.

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Total length	153 mm.
Head	17 "
Body	70 "
Tail	66 "
Width of head	10 "
Length of forelimb	16 "
Length of hindlimb	20 "

LYGOSOMA FRAGILE, *Günther.*

Two specimens; between the Everard and Barrow Ranges.

In the following notes we repeat Boulenger's description, which agrees accurately with the above specimens :—

Body much elongate; limbs very weak, tridactyle. Scaling as in *L. Bougainvillei*, except that the fronto-parietals are united into a single shield, and the fourth labial enters the orbit. Ear just distinguishable. Twenty scales round the body. Hind-limb as long as the distance between the eye and forelimb. Toes very unequal in size, the third longest.

Colour.—Olive above, with indistinct black lines along the series of scales; sides blackish, this colour being sharply defined towards the back; belly sparingly spotted with black.

The following are the measurements of one specimen :—

Total length	74 mm.
Head	6 "
Body	33 "
Tail	35 "
Width of head	4 "
Length of forelimb	4 "
Length of hindlimb	9 "

LYGOSOMA GERRARDII, *Günther.*

One specimen; Fraser Range.

Colour.—Light-grey above, with four narrow dark-brown longitudinal lines. Lateral lines broad, and of the same colour; lower surface yellowish.

Total length, 150 mm.

A species of Lygosoma, represented by three specimens, collected in the Barrow Range, agrees in every respect with *L. Gerrardii*, except that the forelimbs are didactyle, and the hindlimbs tridactyle. There are, in the S.A. Museum, several lizards which we refer to *L. Gerrardii*, with the forelimbs rudimentary or altogether invisible externally. We come therefore to the conclusion that the number of toes in this group, which formerly formed the genus *Rhodona*, are subject to great variation. Boulenger stated, in describing this species, that the fore-limbs are either mono- or di-dactyle.

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LYGOSOMA BIPES, *Fisher.*

A single specimen of this little lizard, which appears to be scarce in collections, was obtained in the Barrow Range. It agrees exactly with the description in the "British Museum Catalogue."

Total length	97 mm.
Head	5 "
Body	47 "
Tail	45 "
Width of head	3 "
Length of hindlimb	10 "

ABLEPHORUS GREYI, *Gray.*

A single specimen; near Camp 9 (Everard Range).

ORDER OPHIDIA.

Typhlops sp.—A small specimen of a species of *Typhlops* was collected in the Fraser Ranges, the specific name of which we are not yet in a position to determine.

PSEUDECHYS AUSTRALIS.

Between the Fraser Range and Yilgarn; two skins in spirit, each about six feet long.

VERMICELLA FASCIATA, *spec. nov.* Pl. VI., figs. 4 and 4*a*.

Near the Barrow Range; one specimen.

Scales in seventeen rows; abdominal plates 145–146; two anal plates; subcaudal plates in two rows of twenty-seven each. Body of moderate length (12·5 inch), nearly cylindrical; the tail short (1⅓ inch), terminating in a blunt conical scale. Head very short (0·30 inch long), not distinct from trunk. Rostral shield large, obtusely angular posteriorly; nostrils elongate, piercing the middle of a rhomboidal nasal shield. Anterior frontals quadrangular, forming sutures with the nasals on the outer margin; posterior frontals hexagonal, also forming sutures with the nasals as well as with the second and third labial shields; vertical shield hexagonal, nearly as broad as long, very obtusely angular anteriorly and nearly rectangular posteriorly. Supra-oculars large, pentagonal anteriorly; one anterior and two posterior oculars. Occipital shields large, pentagonal or hexagonal, broader in front than behind. Three temporal shields, of which the first is the largest and is in contact with the posterior oculars, and also with the fifth and sixth labials. Six upper labials, the third and fourth reaching the margin of the eye, the last the largest. Seven lower labials, the first elongate and forming a long suture behind the triangular mental shield; the second small, and the fourth the largest.

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Colour.—Head cream-coloured; rostral, anterior and posterior frontals marked with black on their posterior margin. Upper lip-shields similarly marked on their superior margin; all the remaining shields of the upper surface of head black. Upper surface very conspicuously marked with 53 black transverse bands, which comprise one row of scales and occupy about one-half the circumference of the body. The spaces between these bands occupy two transverse rows of scales, and present a distinctly orange tinge from the fact that each scale, cream-coloured at its base, is tipped with the former colour. The scales of the the black bands have a pale spot or streak in the centre for the posterior three-quarters of the body. Under-surface uniformly cream-coloured.

This very distinct species resembles *V. Bertholdi* in external appearance, but is proportionally much more elongate, and the black freckles on the head, which are characteristic for the latter species are totally absent in *V. fasciata*. A second specimen in the South Australian Museum conforms to the above description, but the markings have become faded from exposure to light. It was collected in the Western plains.

AMPHIBIA.

Order Batrachia.

Family BUFONIDÆ.

Pseudophryne australis, *Günther*.

Found about forty miles N.W. of the Fraser Range in a rock-hole filled up with silt; seven specimens.

These specimens closely resemble the above-named species, but show slight differences in respect of having the metatarsal tubercles much larger, and a greater predominance of light-colour on the under-surface.

DESCRIPTIONS OF PLATES.

Plates VI.

Fig. 1. Diplodactylus Elderi. *Nat. size.*
" 1*a*. " " Scales of back; *enlarged.*
" 2. Amphibolurus rufescens. Upper surface of body; *nat. size.*
" 2*a*. " " Dorsal scales; *enlarged.*
" 3. Lygosoma melanops. *Nat. size.*
" 3*a*. " " Head shields; *nat. size.*
" 4. Vermicella fasciata. *Nat. size.*
" 4*a*. " " Head shields; *nat. size.*

Plate VII.

Amphibolurus scutulatus. Fig. 1. Male. Fig. 2. Female.

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COLEOPTERA

(Continued).

By REV. T. BLACKBURN, B.A.,

Hon. Curator for Entomology, S. Aust. Mus.

In the former part of this memoir I furnished a catalogue in systematic order of the *Coleoptera* of the Elder Expedition down to the Tribe *Leptopsini* of the Family *Curculionidæ*, one tribe, however, of the *Carabidæ* (the *Broscides)* being omitted, owing to my having asked Mr. T. G. Sloane, of the Linnean Society of N.S. Wales, to deal with it. Mr. Sloane has made a special study of that tribe, and has published some valuable memoirs relating to it, so that it is a matter for congratulation that the Royal Society has been able to enjoy the benefit of his assistance. His contribution on the *Broscides* will be found in the present issue. I now propose to continue and complete the catalogue of the *Coleoptera* of the Expedition, taking up the work at the place where the former part ended. The first of the remaining tribes of *Curculionidæ* (the *Amycterini)* is, however, another group of which Mr. Sloane has made a special study, and that gentleman has been good enough to take them in hand, his memoir relating to them finding a place in this issue.

The first species enumerated in the following catalogue *(Evaniocera minuta)* belongs, it will be observed, to a family (the *Rhipidophoridæ)* whose proper place is in the part issued last December. Its omission was due to the specimen having been so clogged with gum that its characters were not visible, and I accidentally passed it over, under the impression that it was a Phytophagous insect, but as soon as I had cleaned it for examination its real place was of course apparent.

It will be noticed that I have introduced in the catalogue of species obtained by the Elder Expedition descriptions of several species in my own collection. These are insects allied to some of those of the Expedition, and inhabiting localities (such as the McDonnell Ranges, the basin of Lake Eyre, the Eyre-Peninsula) that may be regarded as outlying parts of the geographical region through which the expedition travelled. It seems convenient that their descriptions should appear in company with those of their allies which fell into the hands of Mr. Helms. The interpolated species are indicated by an asterisk prefixed to the name.

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RHIPIDOPHORIDÆ.

EVANIOCERA.

E. minuta, sp, nov. Sat nitida; picea, tibiis paullo dilutioribus, elytris pallide marginatis; pubescens; capite prothoraceque sat fortiter granulatis; hoc a basi ad apicem angustato, lateribus fere rectis, angulis posticis extrorsum (nullo modo retrorsum) directis, basi media sat fortiter lobata; scutello oblongo-quadrato, postice rotundato; elytris minus fortiter granuloso-punctulatis, oblique obsolete striatis. Long., 1⅘ l.; lat., ⅘ l.

Maris antennarum articulo 3° quam 2^us^ duplo longiori et ramum quam sequentium parum breviorem emittenti.

At once distinguishable from the previously described Australian species of this genus by its extremely small size.

Everard Range.

CURCULIONIDÆ (continued).

CYLINDRORHININI.

PANTOPŒUS.

An immature and somewhat crushed specimen seems to appertain to this genus, but its condition forbids its specific determination. It was found about the Barrow Range.

GONIPTERINI.

OXYOPS.

O. pruinosus, Pasc? Mr. Pascoe's description is too brief to allow of positive identification, but the example before me seems likely to be the insect to which this name was given, at any rate it is very near it.

Mount Squires.

O. floreus, Pasc? A similar difficulty forbids my feeling certain that this identification is correct.

Fraser Range.

SYARBIS.

S. gonipteroides, Pascoe. Mount Squires.

S. sciurus, Pascoe. Mount Squires.

ATERPINI.

APARETE.

In dealing with genera characterised by Mr. Pascoe, the precaution generally seems necessary of qualifying one's reference to them of new species. In the present case *Aparete* seems to me very much over characterised, even the relative length of the joints of the funiculus being treated as generic. In this and

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other minutiæ the following species does not agree with the diagnosis, but it presents the following characters, which I take to be the essential features distinguishing *Aparete* from the other *Aterpid* genera:—Ocular lobes wanting; body not cylindric; scrobes terminal or nearly so; club of antennæ closely united to the funiculus; tarsi having their penultimate joint entire.

A. nodosa, sp. nov. Sat convexa; fusco-cinerea, squamis crassis (setulisque brevibus) cinereis vestita; rostro sat brevi supra longitudinaliter concavo; capite utrinque supra oculos cristato; prothorace quam latiori sublongiori, pone apicem subfoveatim depresso, vermiculato-ruguloso, postice subtruncato, antice paullo angustato in medio sat producto, lateribus sat rotundatis; elytris punctulato-striatis, interstitiis convexis, interstitiis 3° 5° que pone medium (hoc 3— illo 2—) 7° ad humerum (hoc 1—) tuberculatis; corpore subtus sparsim fortiter punctulato. Long., $3\frac{4}{5}$—$4\frac{1}{2}$ l.; lat., $1\frac{3}{5}$—2 l.

The basal two joints of the antennal funicle are elongate, the rest transverse or nearly so, the seventh being considerably enlarged and somewhat confused with the club. The metasternum is a little shorter than in *Ethemaia sellata*, Pasc. This species differs *inter alia* from *A. palpebrosa*, Pasc., by the second joint of its funicle not transverse.

Nilpena, and to the west of that place; also Cootinoorina.

HYPHÆRIA.

This genus is very briefly characterised by its author (Mr. Pascoe), who says that the characters are as in *Ethemaia*, but the third tarsal joint not bilobed. The following species do not appear to differ from *Ethemaia*, except by the character specified.

**H. beltanensis*, sp. nov. Minus convexa; nigra vel fusca, setis brevibus squamisque adpressis colore variis (fuscis nigris et albidis) vestita; rostro sat brevi supra longitudinaliter concavo, utrinque cristis 2 instructo; capite utrinque supra oculos cristato; prothorace vix quam latiori longiori, antice leviter angustato, late leviter canaliculato, coriaceo, valde inæquali, margine antico antrorsum postico retrorsum convexis, lateribus leviter arcuatis; elytris confertim subtiliter punctulatis, leviter striatis (striis puncturis magnis seriatis instructis), interstitiis minus (alternis paullo magis) convexis; interstitio 3° tuberculo magno, 5° tuberculis 3, postice ornatis; corpore subtus confertim rugulose reticulato-punctulato. Long., 3—$3\frac{4}{5}$ l.; lat., $1\frac{2}{5}$—$1\frac{3}{5}$ l.

This is an extremely difficult species to describe satisfactorily; probably it may be best distinguished by its generic characters

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and its remarkable head and rostrum. These latter form together an uninterrupted longitudinally concave surface, with a very large crest over each eye, a smaller one on each side of the rostrum near its base, and a still smaller one on each side near the apex of the rostrum. Most of the specimens I have seen are covered with a brown indumentum, which completely hides all the sculpture except the crests of the head and rostrum and the tubercles near the apex of the elytra; also the whole sculpture of the under-surface. I have described the sculpture from an example from which I have with much difficulty removed the indumentum. The only specimen I have seen without the indumentum is a decidedly pretty insect, closely covered with scales and setæ, which almost conceal the sculpture. In that example the crests of the head and rostrum are tipped with bright brown setæ, the prothorax is traversed longitudinally by four ribs of brown scales and is variegated with whitish scales on the sides, the interstices of the elytra form alternate brown and blackish vittæ, and patches of whitish scales are distributed over the elytra, the most conspicuous being a spot running obliquely hindward towards the suture from the anterior part of the seventh interstice. The legs are thickly clothed with brown scales and hairs.

S. Australia; near Beltana.

**H. parallela*, sp. nov. Elongata; parallela; fusca, squamis setisque fuscis cinereisque intermixtis vestita; rostro minus brevi longitudinaliter concavo, capite utrinque supra oculos obsolete cristato; prothorace cylindrico quam latiori sat longiori, grosse ruguloso-punctulato; elytris punctulato-striatis, interstitiis alternis convexis (3° toto et 5° postice tuberculis remotis ornatis, tuberculis discoidalibus nigris). Long., $2\frac{2}{5}$ l.; lat., $\frac{7}{10}$ l.

This species must be referred to *Hyphœria*, as I can find no structural character to distinguish it from *Ethemaia*, except that the third joint of its tarsi is not bilobed. It is very distinct from all its previously-described allies by its very narrow and parallel—almost linear—form. The crest on either side of the head is very feeble. The antennæ are short, not reaching back much behind the front of the prothorax; the basal joint of the funiculus is not much longer than wide, and is much thicker than the following joints, which are moniliform and clothed with fine hairs. The prothorax is almost perfectly cylindric, its front margin a little elevated; the ashy scales on its surface are sprinkled over the surface, but are condensed to form three vittæ. The prevalent scales on the elytra are the cinereous ones; a small black tubercle on the third interstice in front of the middle is accompanied by a similar elevation close to it on the

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fourth interstice slightly nearer the front, and the black colour runs across the stria so that there is an appearance of a small obliquely-elongate black patch; the third interstice bears another small black tubercle or crest a little behind the middle, and another at the posterior declivity and two very small ones near the apex. The hinder part of the fifth interstice bears some obscure tubercles.

Central Australia; McDonnell Range.

**H. variabilis*, sp. nov. Minus elongata; fusca vel nigra, squamis setisque nigris fuscisque intermixtis vestita; *H. parallelæ* affinis; differt forma multo minus gracili minus parallela, prothorace minus elongato ad latera magis rotundato, elytris haud ante medium tuberculatis. Long., $2\frac{1}{5}$—$3\frac{1}{5}$ l.; lat., $\frac{4}{5}$—$1\frac{1}{5}$ l.

This is a most variable insect, and extremely difficult to characterise satisfactorily owing to most specimens being more or less clothed with an indumentum, which conceals the characters. A fresh specimen is clothed with dull-brown scales, with usually some indication on the prothorax of vittæ formed by paler scales; on the elytra there are usually patches of black scales, which vary in extent up to almost covering the surface. The alternate interstices are convex, and the tubercles are confined to the posterior declivity, commencing, however, slightly in front of it; the third and fifth interstices each bear two well-defined tubercles, and there are a few more or less defined granule-like tubercles.

S. Australia; basin of Lake Eyre.

Belini.

Belus.

B. angustulus, Germar. Fraser Range.

B. sparsus, Germar. Fraser Range.

B. difficilis, sp. nov. Angustus, sublinearis; piceus, squamis albidis ornatus, prothorace antice elytris pedibusque rufescentibus; rostro validocylindrico arcuato quam prothorax subbreviori nitido subtilissime punctulato; capite prothoraceque confertim granulatis; antennarum articulis 3° 4° que longitudine inter se æqualibus; prothorace quam latiori vix longiori, vix canaliculato, in medio longitudinaliter albido-squamoso, lateribus leviter arcuatis antice subcoarctatis, basi bisinuata; elytris confertim sat subtiliter punctulatis suturam versus maculatim albido-squamosis, ad apicem singulatim acuminatis vix productis, juxta scutellum subelevatis; abdomine in medio sparsim, ad latera dense albo-hirto; femoribus

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anticis muticis fortiter incrassatis, posticis segmenti ventralis basalis apicem haud attingentibus. Long (rostr. incl.), 5 l.; lat., 1 l.

Closely allied to *B. angustulus*, Germ., and *filiformis*, Germ., differing from the former *inter alia* by its shorter and stouter rostrum, its more linear form and the much less produced apices of its elytra; from the latter *inter alia* by its elytra distinctly mottled with whitish scales near the suture, its less elongate form and the more produced apices of its elytra.

Fraser Range.

B. Helmsi, sp. nov. (fem.). Minus angustus; niger, squamis niveis ornatus, rostro antice et antennarum basi summa paullo rufescentibus; rostro cylindrico leviter arcuato quam prothorax paullo longiori, nitido, sat crebre a basi antrorsum gradatim magis subtiliter punctulato; capite mox intra oculos niveo-squamoso, sat crasse punctulato-granuloso; prothorace valde crasse nec crebre ruguloso-granulato (magis crasse minus crebre quam *B. bidentati*, Don.), quam longiori sat latiori, in medio canaliculato, niveo-trivittato, lateribus fortiter rotundatis, latitudine majori pone medium posita, basi media fortiter lobata; elytris ad basin fortiter (quam *B. bidentati* multo magis fortiter) singulatim lobatis, ad apicem singulatim acuminato-productis (quam *B. hemisticti*, Germ., paullo minus fortiter), antice fortiter granulosis postice fortiter vix crebre (quam *B. hemisticti*, Germ., paullo minus crasse minus crebre) punctulatis, longitudinaliter leviter bisulcatis (parte intermedia leviter convexis), maculatim niveo-squamosis, maculis antice confusis postice subtriseriatim ordinatis; abdomine ad latera dense, in medio confuse maculatim niveo-hirto; femoribus anticis muticis posticis segmenti ventralis secundi partem mediam attingentibus. Long. (rostr. incl.), 7 l.; lat., $1\frac{2}{5}$ l.

Allied to *B. semipunctatus*, Fab., and *hemistictus*, Germ., differing from both *inter alia* by its mutic femora, and the absence of any trace of an elytral carina; also near *B. amplicollis*, Jekel, but differing by its black antennæ and tibiæ; also (perhaps) near *B. anguineus*, Pasc. (which is insufficiently described), but differing from the description by its decidedly transverse prothorax. The elytra are not at all elevated at the base of the scutellum. The third joint of the antennæ is distinctly longer than the fourth.

Fraser Range.

B. ventralis, sp. nov. Elongatus, sat angustatus, sat parallelus; niger, squamis niveis ornatus, pedibus elytrisque nonnihil rufescentibus; rostro cylindrico leviter arcuato quam pro-

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thorax sat longiori subtiliter sat crebre punctulato; capite inter oculos trivittatim niveo-squamoso, granuloso; prothorace sat fortiter nec crebre (quam *B. bidentati* manifeste minus crebre) granuloso, quam latiori fere longiori, in medio leviter canaliculato et interrupte niveo-squamoso, in disco utrinque maculis nonnullis niveis ornato, lateribus leviter arcuatis, basi fortiter bisinuata; elytris ad basin sat fortiter (fere ut *B. bidentati*, Don.) singulatim lobatis, ad apicem singulatim acuminato-productis (quam *B. hemisticti*, Germ., vix minus fortiter), sat fortiter sat crebre (fere ut *B. scalaris*, Germ.) granuloso-punctulatis, fere ut præcedentis *(B. Helmsi)* squamis niveis ornatis; abdomine ad latera dense niveo-hirto in segmentorum singulorum medio maculis singulis trifidis (ut *B. scalaris*, Germ.) niveo-hirtis ornato, femoribus anticis muticis, posticis segmenti ventralis basalis apicem vix attingentibus. Long., 8 l.; lat., $1\frac{3}{10}$ l.

Very close to *B. scalaris*, Germ., but certainly not, I think, a *mere* variety. It differs in the much more nitid and less conspicuously punctulate rostrum, in the prothorax longer and less rounded laterally (in the same sex), and especially in the white pilosity on the elytra not being confined to the sutural region, but forming three rows of spots on each elytron, with other spots added in the basal part. If it should prove to be a variety of *scalaris* the very different markings of the elytra would justify its being a *named* variety. It is not quite so narrow and elongate as *B. scalaris*.

Fraser Range.

B. frater, sp. nov. Sat elongatus; sat angustus; niger, squamis niveis ornatus, rostro elytris pedibusque plus minusve rufescentibus; rostro cylindrico leviter arcuato quam prothorax paullo longiori, subtiliter (maris) vel subtilissime (feminæ) punctulato; capite mox intra oculos niveo-squamoso, ut prothorax crebre nec crasse granuloso; prothorax leviter transverso, sat late canaliculato (canali dense niveo-squamoso), lateribus postice sat rotundatis, basi fortiter bisinuata; elytris ut præcedentis *(B. ventralis)* sed pone scutellum leviter gibbosis, plus minusve (omnium exemplorum sutura dense) crebre maculis niveis squamosis ornatis; abdomen fere ut *B. ventralis;* femoribus anticis subtus ante apicem bidentatis, posticis segmenti ventralis basalis apicem vix attingentibus. Long. (rost. incl.), 6—8 l.; lat., 1—$1\frac{2}{5}$ l.

In the male the rostrum is more strongly punctured than in the female, and the anterior femora are much less incrassate. This species is so close to the preceding that if I had not seen both sexes of it I should have hesitated to distinguish it specific-

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ally. It, however, differs in its femora dentate beneath, its more slender rostrum, its prothorax wider with more rounded sides and closer sculpture , its elytra slightly protuberant behind the scutellum, its less linear form, and its abdomen with the pilosity of the middle part (though forming a similar pattern) much less dense and conspicuous (this is not owing to abrasion). The fourth joint of the antennæ is scarcely longer than the third. In some examples the pilosity along the suture scarcely consists of spots, but is continuous.

Fraser Range.

**B. bison*, sp. nov. *B. Helmsi* affinis; rostri apice et antennarum basi haud rufescentibus; capite prothoraceque sat crebre vix crasse (fere ut *B. bidentati*, Don.) granulosis; prothoracis canali vix perspicue niveo-squamoso; elytris pone scutellum fortiter abrupte elevatis, ad basin quam *B. Helmsi* minus (quam *B. bidentati* magis) fortiter lobatis, postice quam *B. hemisticti*, Germ., vix minus crebre punctulatis, sulco exteriore vix manifesto; femoribus posticis segmenti ventralis basalis apicem parum superantibus; metasterni episternis macula magna denudata instructis; cetera ut *B. Helmsi*. Long. (rostr. incl.), $6\frac{1}{2}$—$7\frac{4}{5}$ l.; lat., $1\frac{2}{5}$—$1\frac{4}{5}$ l.

This species is remarkably like *B. Helmsi*, but is at once distinguishable from it by the strongly-defined hump behind its scutellum, by the notably closer and less-coarse sculpture of its head and prothorax, by its prothoracic channel almost devoid of pilosity (apparently not the result of abrasion), by the very evidently closer puncturation of its elytra, by the longitudinal concave spaces on the elytra being very feeble (the outer one scarcely traceable), by the third joint of the antennæ being not at all longer than the fourth, by the presence of a large round denuded spot on the episterna of the metasternum—that part being in *B. Helmsi* (as in most *Beli*) covered uniformly with the pilosity of the lateral stripe—and by its shorter hind femora.

The male is a little smaller and narrower than the female, its rostrum scarcely different from that of the female, its elytra a little less produced posteriorly, and (as usual in the genus) its anterior femora much less incrassate.

Interior of S. Australia; basin of Lake Eyre; in my collection

**B. perplexus*, sp. nov. (Mas.) *B. Helmsi* affinis; rostri apice vix antennarum basi nullo modo rufescentibus; prothorace magis crebre minus crasse (fere ut *B. bidentati*, Don.) ruguloso-granuloso, canali vix perspicue niveo squamoso, lateribus ab apice fere ad basin subrecte divergentibus (ut *B. bidentati*, Don. maris), basi media minus fortiter lobata; elytris ad basin minus fortiter (quam *B. bidentati* manifeste minus

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fortiter) lobatis, distincte tricarinatis, carinis antice et postice obsoletis. Long. (rostr. incl.), 6 l.; lat., $1\frac{3}{10}$ l.

Sterni episternis maculis denudatis binis ornatis, cetera ut *B. Helmsi*.

This insect is extremely close to *B. Helmsi* and *B. bison*, but is certainly a good species. From *B. Helmsi* it is at once distinguishable by the base of the elytra being very much less strongly lobed forward and the third and fourth joints of its antennæ being equal or nearly so; from *bison* by the absence of any elytral protuberance behind the scutellum, and from both by the three well-defined carinæ on each of its elytra. These carinæ terminate at the point where the elytra begin to narrow to the apex; that nearest the suture begins at a distance from the base about equal to a quarter of the length of the elytra, and the others at successively increasing distances from the base; the intervals between them are not distinctly concave, but there is a wide flat space on either side of the suture limited by the first of the carinæ. The innermost carina on each elytron is almost exactly like the corresponding carina on the elytra of *B. bidentatus*, but is more distant from the suture. The prothorax of almost exactly the same shape (but a little less transverse), at any rate in the male, as that of *B. bidentatus* is a good character.

I have examples from Western Australia of a *Belus* which I cannot separate from this by any definite character, although it has a very different appearance owing to the squamosity of its surface being grey rather than white, and being very much more plentiful, almost covering the surface.

Interior of S. Australia; basin of Lake Eyre.

**B. Flindersi*, sp. nov. (Mas.) *B. Helmsi* affinis; piceo-niger, rostro antennis pedibusque paullo rufescentibus; prothorace minus crasse magis concinne granulato (fere ut *B. scalaris*, Germ., sed granulis nonnihil majoribus), quam longiori fere tertia parte latiori, canali mediano albo-squamoso nisi ad basin carente, basi media minus fortiter lobata; elytris ad basin paullo minus fortiter lobatis, antice magis crebre magis subtiliter granulosis postice magis crebre punctulatis; abdomine toto et metasterno maculis denudatis ornatis nec ad latera vitta pilosa continua instructis; femoribus anticis dentibus binis parvis armatis, posticis segmenti ventralis basalis apicem vix superantibus; cetera ut *B. Helmsi*. Long. (rostr. incl.), $6\frac{1}{2}$ l.; lat., $1\frac{2}{3}$ l.

The greatest width is immediately behind the base of the elytra, whence the outline is slightly incurved, the width near the apex being not much less than in front; in the species of *Belus* having an outline of this kind the posterior dilatation is

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usually greater than that behind the base. The typical example is distinguished from its nearest allies by the distinctly reddish tone of the elytra and legs, and by the paucity of its whitish scales, which form small spots placed at long intervals along the suture, and a few not very conspicuous spots sparsely sprinkled over the rest of the surface; but it is quite possible that these characters of colour and vestiture are not constant. The whole of the under-surface being mottled with denuded spots, so that there is no continuous white stripe, is likely to be a reliable character. The third and fourth joints of the antennæ are almost equal in length.

South Australia; Eyre's Peninsula.

**B. mundus*, sp. nov. Sat angustus; parallelus; piceo-niger, squamis niveis ornatus, antennis pedibusque paullo rufescentibus; rostro cylindrico quam prothorax vix longiori, pone antennarum basin ut capite prothoraceque opaco sat crebre granuloso-ruguloso, antice nitido fere lævigato; antennis sat brevibus, articulis 3° 4° que longitudine inter se sat æqualibus; capite mox intra oculos niveo-squamoso; prothorace leviter transverso, canaliculato, canali niveo-squamoso; lateribus a basi fere ad apicem fortiter rotundatis, basi fortiter bisinuata; elytris ad basin sat fortiter (fere ut *B. scalaris*, Germ.) lobatis, ad apicem singulatim rotundatis haud productis, sat crebre (quam *B. scalaris*, paullo minus fortiter) rugulosis, maculatim niveo-squamosis, maculis juxta suturam majoribus magis crebris; corpore subtus ad latera dense in parte mediana minus dense niveo-piloso, hac maculatim subdenudata; femoribus anticis subtus sat fortiter bidentatis, posticis segmenti ventralis basalis apicem vix superantibus. Long. (rostr. incl.), 5½ l.; lat., 1 l.

This is a very cylindric and parallel species, but not extremely slender or narrow, its shape being very much as in *B. scalaris*, Germ., albeit not quite so elongate. Its elytra scarcely at all produced (much less than in *B. scalaris*, though evidently more so than in *B. brunneus*, Guér.) at the apex, together with the presence of strong teeth beneath each of its front femora, associates it with a small group of species from all of which it is very distinct—by the following among other characters:—from *B. aphthosus*, Pasc., by its transverse prothorax, from *brunneus* by the character already mentioned, from *serpens*, Pasc., by there being two teeth (not only one) beneath its front femora. One or two others of Mr. Pascoe's briefly-described species may possibly belong to the same group, as their author does not say whether the femora are dentate, but even in that case they evidently (judging from description) differ in respect of other characters.

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I think the example before me is a female, but do not feel quite sure, as the front femora are more incrassate than in the males of most species, but rather slightly so for a female; the sculpture of the rostrum is suggestive of the male.

Interior of S. Australia; Mernmerna.

**B. abdominalis*, sp. nov. Angustus; parallelus; rufo-piceus squamis niveis ornatus, pedibus dilutioribus; rostro cylindrico quam prothorax vix longiori, sat nitido, sat subtiliter punctulato (maris postice magis fortiter); antennarum articulis 3° 4° que longitudine inter se sat æqualibus; capite sparsim niveo-squamoso, granuloso-punctulato; prothorace quam longiori vix latiori, sat crebre (fere ut *B. scalaris*, Germ.), granuloso, leviter canaliculato, canali niveo-squamoso, lateribus a basi fere ad apicem sat rotundatis, basi fortiter bisinuata; elytris ad basin modice (paullo minus fortiter quam *B. scalaris)* lobatis, ad apicem singulatim acuminatis vix productis, sat fortiter (fere ut *B. scalaris)* punctulato-rugulosis, sparsim maculatim niveo-squamosis (præsertim juxta suturam); corpore subtus æqualiter niveo-piloso, maculis rotundatis denudatis ornatis, his in metasterno biseriatim in abdomine triseriatim longitudinaliter dispositis; femoribus anticis muticis, posticis segmenti ventralis basalis apicem nullo modo attingentibus. Long. (rostr. incl.), $4\frac{1}{2}$—$5\frac{1}{2}$ l.; lat., $\frac{3}{5}$—$\frac{9}{10}$ l.

A very narrow elongate species, perhaps closely allied to the very insufficiently described *B. farinarius*, Pasc., and *B. vetustus*, Pasc., but I do not think it can be identical with either of them, as Mr. Pascoe calls the latter "modice elongatus," and says of the former that it is "shorter than *B. vetustus*," the present species being a *very* elongate one, even more so than *B. filiformis*, Germar. Mr. Pascoe gives no information as to whether the femora of those two species are dentate beneath. He describes the abdomen of *B. farinarius* as having "four denuded spots on each side" which does not fit the present insect, it having in addition four round denuded spots along the middle line. This pattern on the ventral segments, each of the first four segments having a transverse row of three sharply defined round denuded spots, distinguishes the present species from all its near allies.

W. Australia; taken by E. Meyrick, Esq.

**B. elegans*, sp. nov. Sat angustus; parallelus; piceus, squamis cinereis ornatus, rostri apice rufo; rostro cylindrico arcuato quam prothorax manifeste longiori, sat nitido, subtilissime punctulato; antennarum articulo 3° quam 4^{us} sublongiori; capite sparsim subtiliter granuloso, inter oculos sparsim cinereo-squamoso, prothorace quam latiori vix longiori, sat

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sparsim granuloso (fere ut *B. scalaris*, Germ.), sat fortiter canaliculato, canali cinereo-squamoso, lateribus a basi fere ad apicem leviter arcuatis, basi fortiter bisinuata; elytris ad basin modice (fere ut *B. scalaris*) lobatis, ad apicem singulatim acuminatis vix productis, sat crebre granuloso-rugulosis (haud distincte punctulatis), sat æqualiter (ad suturam haud magis quam in partibus ceteris) cinereo-maculatis, maculis inæqualibus nonnullis parvis nonnullis magnis intermixtis; corpore subtus sat dense cinereo-maculatis, abdominis segmentis 1-4 utrinque macula rotunda denudata ornatis; femoribus anticis subtus bidentatis, posticis segmenti ventralis basalis apicem vix superantibus. Long. (rostr. incl.), $4\frac{3}{5}$ l.; lat., 1 l. (vix).

A very distinct species, owing to the large and small cinereous patches on the elytra not being especially connected with the suture; the larger spots run more or less in two longitudinal rows on each elytron, of which the external one is scarcely less conspicuous than that nearer the suture. The general form is much as in *B. scalaris*, but less elongate, and with the elytra slightly more evidently at their widest behind the middle. This species is perhaps near *B. aphthosus*, Pasc., which, however, is so slightly described that it is difficult to form a clear idea of what it is like. It would seem, however, that it has a single tooth beneath all the femora, and that there are no denuded spots on its abdomen, both which characters furnish distinctions from the present insect.

S. Australia; I am not sure of the exact habitat, but it is probably in the Northern interior.

**B. regalis*, sp. nov. Sat elongatus; minus parallelus; piceo-niger, squamis cinereis et nonnullis flavescentibus vittatim ornatus, elytris pedibusque (nonnullorum exemplorum) plus minusve rufescentibus; rostro quam prothorax longiori, arcuato, nitido, subtilissime punctulato (maris basin versus paullo magis fortiter); capite inox intra oculos flavescenti squamoso, rugulose punctulato; prothorax quam longiori sexta parte latiori, sat fortiter (fere ut *B. bidentati*, Don.) granuloso, cinereo 3-vittato, sat fortiter canaliculato, lateribus ab apice fere ad basin rotundatum divergentibus (fere ut *B. bidentati*), basi bisinuata; elytris ad basin modice lobatis, ad apicem sat fortiter acuminato-productis, pone scutellum sat fortiter callosis, crebrius granulosis vel granuloso-punctulatis (fere ut *B. suturalis*, Boisd.), vittis 2 (scil. subsuturali cinerea et sublaterali flavescenti) squamosis ornatis; corpore subtus ad latera et in medio dense in ceteris partibus crebre maculatim niveo-squamoso; femoribus anticis

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subtus minute bidentatis, posticis segmenti secundi ventralis partem median attigentibus. Long. (rostr. incl.), $7\frac{1}{2}$—$9\frac{1}{4}$ l.; lat., $1\frac{3}{10}$—$1\frac{3}{5}$ l.

A large and handsome species, at once distinguishable by the unusual markings of its elytra, which consist of a continuous ashy-white vitta on either side of the suture extending from the base to the apex, and a yellow vitta (abbreviated near the base and apex) not far from the lateral margin. These vittæ appear to be sprinkled with minute dark spots owing to the granules of the elytra protruding through them. In form and sculpture this species is extremely close to *B. suturalis*, Boisd., but it differs totally in colour and markings, and also in the presence of a well-defined hump behind the scutellum. It also probably resembles *B. subparallelus*, Jekel (which I have not to my knowledge seen), but is evidently distinct from it, as *inter alia* that species is described as "supra violaceo-niger, antennis rufis," and the narrowness of its prothorax (which is even called "subcylindrico-conic") is particularly mentioned, none of which expressions fit the present insect. The third and fourth joints of the antennæ are of about equal length. The male differs from the female by its more slender front femora, the stouter basal joint of its antennæ, and the less fine puncturation of the base of its rostrum.

S. Australia; Eyre's Peninsula; on *Casuarina*.

**B. Adelaidæ*, sp. nov. Sat elongatus; parallelus; piceus, squamis cinereis vittatim ornatus, rostro (basi excepta) læte sanguineo, antennis tibiis elytrisque plus minusve rufescentibus; rostro quam prothorax longiori, arcuato, subtilissime (basin versus minus subtiliter) punctulato; capite prothorace et elytris ut *B. regalis* squamosis, sed squamis omnibus cinereis, in prothorace vittis lateralibus minus perspicuis; capite et prothorace ut *B. regalis* granulosis; prothorace vix transverso, sat fortiter canaliculato, lateribus a basi fere ad apicem fortiter rotundatis, basi bisinuata; elytris ad basin minus fortiter lobatis, ad apicem acuminatis vix productis, pone scutellum haud callosis, sat crebre antice granulosis postice punctulatis; corpore subtus ad latera dense in medio minus dense niveo-piloso, mox intra partem dense niveo-squamosam linea gracili fere continua denudata ornato; femoribus anticis subtus bidentatis, posticis segmenti secundi ventralis partem mediam fere attingentibus. Long. (rostr. incl.), 5—$5\frac{1}{5}$ l.; lat., $\frac{4}{5}$—1 l.

The squamose markings of the upper-surface are almost exactly as in *B. regalis*, the scales, however, being all of an ashy colour, and those forming the lateral vittæ of the prothorax being less distinct. The markings of the under-surface differ in the absence

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of the narrow median longitudinal line of dense pilosity which in that species traverses the otherwise-thinly pilose space between the lateral vittæ. The bright-red colour of the anterior two-thirds of the rostrum seems constant The small size and the scarcely-produced apex of the elytra at once distinguish this species from *B. regalis*.

S. Australia; on the hills near Adelaide.

**B. distinctus*, sp. nov. (Mas.) Angustissimus; parallelus; niger, squamis niveis ornatus; rostro postice crasse antice sat subtiliter punctulato, quam prothorax parum longiori, cylindrico, arcuato; antennarum articulis 3° quam 4^to^ sublongiori; capite prothoraceque minus crebre granulosis (fere ut *B. scalaris*, Germ.), hoc inter oculos niveo-squamoso; prothorace quam latiori sublongiori, canaliculato, canali dense niveo-squamoso, lateribus modice arcuatis, basi bisinuata; elytris ad basin modice lobatis (ut *B. scalaris*, Germ.), ad apicem minus acuminatis haud productis, pone scutellum haud callosis, crasse granuloso-punctulatis (fere ut *B. scalaris*, Germ.), vitta densa suturali (fere ut *B. suturalis*, Boisd.) et serie dorsali maculari bene determinata niveo-squamosis ornatis; corpore subtus dense niveo-piloso, segmentis ventralibus singulis maculis 3 denudatis (maculis medianis triangularibus) ornatis; femoribus anticis muticis, posticis segmenti ventralis basalis apicem haud attingentibus. Long. (rostr. incl.), $5\frac{1}{5}$ l.; lat.., $\frac{4}{5}$ l.

A very pretty species owing to the strong contrast between the black colour of the general surface and the white pilosity which forms a continuous stripe from the front of the prothorax to the apex of the suture, and also a longitudinal dorsal row (abbreviated in front) of small sharply-defined spots. The pattern on the ventral segments is much like that in *B. abdominalis*, but the denuded spots are much larger, the middle one on each segment (especially on the basal two segments) being of an elongate triangular shape.

S. Australia; Eyre's Peninsula.

**B. tibialis*, sp. nov. (Mas.) Sat elongatus; postice angustatus; rufus, squamis setuliformibus niveis vestitus, his in corpore supra (nisi in prothoracis canali et scutello) æqualiter sparsim in corpore subtus (nisi ad sternorum latera) æqualiter modice dense in scutello prothoracisque canali et ad sternorum latera densissime dispositis, segmentis ventralibus singulis macula parva mediana denudata ornatis, capite rostro antennisque piceis, elytrorum sutura infuscata; rostro sat gracili sat cylindrico sat fortiter arcuato, quam prothorax longiori subtiliter (postice magis fortiter) punctu-

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lato; antennarum articulis 3° 4° que longitudine inter se æqualibus; supra sat crasse ruguloso-punctulatis; prothorace quam latiori vix longiori, lateribus modice arcuatis pone apicem leviter sinuatis, basi bisinuatis; elytris ad basin modice lobatis, ad apicem singulatim acuminatis vix productis, a basi retrorsum gradatim angustatis, latitudine majori trans humeros posita; femoribus anticis subtus dentibus 2 armatis (altero elongato altero minuto), posticis ultra segmenti ventralis basalis apicem attingentibus; tibiis anticis ad basin subito arcuatim angustatis, mox ante basin dente magno armatis et hinc ad apicem subtiliter denticulatis; tarsorum anticorum articulo basali valde dilatato. Long. (rostr. incl.), $4\frac{1}{3}$ l.; lat., $\frac{1}{6}$ l. (vix.)

This is the most remarkable *Belid* I have seen; it might with some reason be treated as the type of a new genus, owing to the following characters:—Antennæ inserted unusually near to the base of the rostrum, the whitish hair-like scales on the upper-surface evenly and thinly distributed, except in the prothoracic channel, and the remarkable structure (probably sexual) of the front legs. It may be noted that the same structure (except the large tooth below the base of the tibia) is feebly reproduced in the four hinder legs. All the vestiture is really white, but the variation in its density makes it appear to be of three different colours, sc., snowy white on the middle of the prothorax the scutellum and the sides of the sterna, less *snowy* on the abdomen, and still less on the elytra.

W. Australia; sent to me by E. Meyrick, Esq

The following table shows the relation *inter se* of the species described above:—

A. Front femora unarmed.
  B. Elytra not callose behind the scutellum.
    C. Elytra not carinate.
      D. Elytra not longitudinally concave close to the suture.
        E. Elytra not (or scarcely) produced at the apex (at most much less than in *B. scalaris*, Germ.).
          F. Elytra coarsely sculptured (not less coarsely than in *B. scalaris*, Germ.).
            G. A continuous dense white stripe runs down the prothorax and elytral suture ... distinctus, Blackb

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GG. The sutural pilosity forms sparsely-placed spots ... ... abdominalis, Blackb.
FF. Elytra much less coarsely sculptured ... ... difficilis, Blackb.
EE. Elytra produced at the apex (as in *B. scalaris*, Germ.) ... ... ventralis, Blackb.
DD. Elytra longitudinally concave close to the suture ... Helmsi, Blackb.
CC. Elytra carinate ... ... perplexus, Blackb.
BB. Elytra strongly callose behind the scutellum ... ... bison, Blackb.
AA. Front femora dentate beneath—the teeth equal.
B. Elytra not callose behind the scutellum.
C. Dorsal squamosity of the elytra (if any) forms spots.
D. Elytra strongly produced at apex.
E. Sides of under-surface with a stripe of dense white pilosity ... ... frater, Blackb.
EE. Under-surface entirely mottled with denuded spots ... ... Flindersi, Blackb.
DD. Elytra not produced at apex
E. Spots of pilosity on the elytra small, and placed chiefly along the suture... mundus, Blackb.
EE. Spots of pilosity on the elytra promiscuously scattered, and of very uneven size ... ... elegans, Blackb.
CC. Dorsal squamosity of the elytra forms a well-defined continuous vitta ... ... Adelaidæ, Blackb.
BB. Elytra callose behind the scutellum ... ... regalis, Blackb.
AAA. Front femora with two very unequal teeth ... ... tibialis, Blackb.

Haplonycini.

HAPLONYX.

A single example of this genus occurred in the district west of the Fraser Range. It is very near to *H. cionoides*, Pasc., but

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does not quite agree with S. Australian specimens of that insect. I do not think, however, that it would be desirable to found a new species on a single example in this large and difficult genus, unless it presented some well-defined distinctive character, which the present species does not.

Cryptorhynchini.

Neolybæba (gen. nov.).

Rostrum elongatum gracile leviter arcuatum; scrobes (exempli typici) medianæ sat rectæ; oculi grosse granulati; antennæ sat graciles, funiculo 7-articulato; prothorax ad basin fortiter bisinuatus, lobis ocularibus latis; coxæ anticæ contiguæ; femora subtus dentata (anticis angulatis magis quam perspicue dentatis); unguiculi liberi; abdominis segmentum basale (quam metasternum parum longius) quam 2^{um} fere duplo longius, hoc quam 3^{us} 4^{us} que conjuncti parum breviori, sutura prima parum arcuata.

The species for which I propose this new name does not appear capable of being referred to any existing genus. It belongs to the group of *Cryptorhynchides* in which the rostral canal is very short (not separating the anterior coxæ), and which consequently form a connecting link between the *Cryptorhynchides* and *Erirhinides*. Among these it is distinguished by the following characters in combination; rostrum elongate and not subulate, eyes very coarsely facetted (as in *Melanterius*), base of prothorax strongly bisinuate, femora dentate beneath, body densely clothed with scales. The general form is extremely like that of the *Erirhinid* genus *Gerynassa*. Probably *Lybæba* is really the nearest ally of this genus.

N. remota, sp. nov. Testaceo-rufa; squamis rufis albidisque (his maculatim intermixtis) confertim vestita; rostro quam prothorax paullo longiori, glabro nitido (parte basali squamosa excepta); antennarum funiculi articulis basalibus 2 elongatis, ceteris sat brevibus; prothorace quam longiori paullo latiori, antice subtubulato; elytris subtiliter punctulato-striatis, interstitiis 3° 5° que apicem versus (et 7° antice) convexis, humeris extrorsum prominulis, interstitiis 3° 5° 7° que hic illic obtuse tuberculatis. Long. (rostr. excl.), $2\frac{1}{5}$ l.; lat. 1 l.

The whitish scales are the most numerous; regarding them as the ground-colour, the red scales form two large ill-defined blotches near the base of the prothorax, and a number of small ill-defined spots on the elytra. The scutellum is white.

Everard Range.

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MELANTERIUS.

M. vinosus, Pascoe. Mount Squires.

AXIONICUS.

A. insignis, Pascoe. Victoria Desert.

LONGICORNES.

PACHYDISSUS.

P. Tatei, Blackburn. Murchison District.

PHORACANTHA.

P. semipunctata, Fabricius. Fraser Range.

ATESTA.

This species differs from *Atesta* in the spine of the third joint of the antennæ being almost obsolete, the corner of the joint where the spine might be expected being merely a little produced in a sharp point. The three species which Mr. Pascoe associated to form this genus are characterised as *Phoracanthids*, having the characteristics of their group reduced to a minimum, the antennal spines being only one or two, and the apical spines of the elytra nearly or quite obsolete. This species reaches the lowest point in these respects of any yet described, the spines of the elytral apex being quite, and those of the antennæ all but, wanting.

A. eremita, sp. nov. (Mas.) Sat angusta; minus nitida; sat sparsim pubescens et capillis elongatis erectis vestita; piceo-nigra, antennis (quam corpus paullo longioribus) palpis pedibus et corpore subtus (abdominis lateribus apiceque exceptis) ferrugineis; elytris apicem versus crasse profunde (retrorsum gradatim minus profunde magis subtiliter) punctulatis, flavo-maculatis; ad apicem rotundatis; antennarum articulis 3° 4° que brevissime vix perspicue spinosis. Long., 9 l.; lat. $2\frac{1}{5}$ l.

The yellow marks on each elytron are two spots a little behind the base (placed transversely and probably in some examples confluent), a large irregularly-shaped spot about the middle, not quite reaching either the suture or the lateral margin, and a spot occupying the apex. The head and prothorax are somewhat finely and closely, but not very distinctly, punctured, the latter bearing a median lanciform nitid space with about six ill-defined more or less nitid tubercles on each side, some of them more or less run together (probably variously in different examples) so that they are difficult to count. The length of the prothorax is about equal to its width. On each side one of the tubercles being placed on the lateral declivity makes the segment appear protuberant in the middle when looked at from above. All the

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femora are extremely stout, a character very likely to be sexual.

This species is very near to *A. Tutei*, Blackb., but is very distinct from it by reason *inter alia* of its much less nitid surface and the absence of an apical elytral spine, also the presence of yellow markings between the base and middle of the elytra which I have not seen in any example of *A. Tutei*.

Victoria Desert.

APHANASIUM.

I feel considerable hesitation in referring the following species to this genus. Probably Mr. Pascoe (who has done the largest part of the work hitherto on the Australian Longicorns) would found a new genus for it, but as the genera already formed for species more or less allied to the present insect are numerous and perplexing, I am anxious to avoid any risk of increasing the difficulty. Fortunately this particular insect presents notable specific characters that will render its identification easy, and it is certainly very near to *Aphanasium*. In M. Lacordaire's arrangement of the *Cerambycides* the following characters—eyes coarsely granulated, intermediate coxæ open laterally, abdomen slender and cylindrical, with the apical segment elongate—bring its possible location within somewhat narrow limits, and the additional character of its labial and maxillary palpi being equal (or nearly so) *inter se* in length, reduces to two *(i.e., Neostenides* and *Aphanasiides)* the subfamilies in which it could be placed. These two subfamilies appear to me to be very close; M. Lacordaire distinguishes them *inter se* in his tabulation by the anterior coxæ of the former being "moderately prominent," and of the latter "prominent" (a distinction which I do not find workable, as there is, *e.g.*, no marked difference in this respect between *Neostenus Saundersi*, Pasc., and *Aphanasium australe*, Boisd.), and adds in his detailed descriptions several slight and unsatisfactory distinctions, together with the more definite one that in the former the legs are short, the hind femora never reaching beyond the second ventral segment, while in the latter they are "moderately long." In the present insect the front coxæ are about as prominent as in the two species mentioned above, but as the hind femora reach considerably beyond the second ventral segment (being about as long as in *Aphanasium australe)* I must regard the species as an *Aphanasiid*. *Aphanasium* is the only Australian genus of the subfamily yet noticed (unless *Myrsus*, whose habitat is unknown, be Australian, to which genus, however, the present species cannot, I think, be referred, especially as Lacordaire's characters for it in his tabulation and his diagnosis flatly contradict each other; at any rate, the *species* is very unlike the present one)' The abdomen of the insect before me is considerably more narrowly-cylindrical and *Neostenus*-like than

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that of *Aphanasium australe*, its hind tarsi (especially the basal joint) are evidently less elongate, and its eyes (in the male) are less widely separated above, but I do not find any other structural character inconsistent with its being congeneric with *A. australe*, although it is very unlike it in size and colouring. It is quite possible that the form of the abdomen may be to some extent due to abnormal shrinkage in drying, and as the comparative approximation of the eyes is not a good generic character, there remains only the form of the hind tarsi, and this seems to me scarcely a sufficient character to require the creation of a new generic name.

In some respects (especially in the colouring and markings) this species resembles *Didymocantha obliqua*, Newm., which I cannot regard as at home among the *Callidiopsides*, where M. Lacordaire places it, its facies being extremely unlike *Callidiopsis*, and the structure of its intermediate coxæ being different from that genus. As, however, the meso-thoracic epimera in the present insect are in contact with the intermediate coxæ, and are separated from them in *Didymocantha*, the two could not in Lacordaire's classification be associated.

It should be noted that the underside of the four posterior femora in this species is concave longitudinally, and is filled (probably in the male only) with short woolly pubescence.

A. variegatum, sp. nov. (Mas). Modice elongatum, sat parallelum; nigrum, elytris (his fusco-notatis) metasterno medio coxis femorum basi summa tibiarum parte basali dimidia tarsis et antennis lividis, harum articulis 1° (basi summa excepta) 3° —5° (ad apicem summum) 6° 7° que in parte apicali dimidia infuscatis; sparsim pubescens; capite brevi sat fortiter sat crebre punctulato; prothorace sat transverso, ut caput punctulato, 11-tuberculato [sc. ante basin transversim 5-tuberculato (tuberculis externis spiniformibus), pone apicem 4-tuberculato, et utrinque tuberculo laterali mediano munito] sic ut latera de super visis tuberculos tres (horum posteriori spiniformi) præbent; elytris ad apicem rotundatis, obsoletissime bicostatis, quam prothorax paullo minus crebre punctulatis, notis fusco-nigris ornatis (sc. linea a humeris retrorsum et suturam versus arcuata, macula marginali mox pone basin, fascia mediana sat angusta in sutura retrorsum producta) et apicem versus indeterminate infuscatis; antennis sat compressis, quam corpus sesquilongioribus, articulis 1° 3° 4° que inter se longitudine sat æqualibus, ceteris sat longioribus; femoribus 4 posticis subtus longitudinaliter depressis et dense breviter lanuginosis. Long., 7 l.; lat., $1\frac{3}{5}$ l.

The prothorax bearing two well-defined tubercles and a spine

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on each side, together with the colouring and the elytral pattern resembling the same in *Didymocantha obliqua*, Newm., and the bright livid patch in the middle of the metasternum, will render this species easy of identification.

Murchison District.

APOSITES.

A. niger, Blackburn. Murchison District.

A. lanaticollis, Blackburn. Murchison District.

STEPHANOPS.

**S. nasuta*, Newman. Albany.

SYLLITUS.

S. grammicus, Newman. Fraser Range.

S. uniformis, sp. nov. Supra ferrugineus, antennarum articulo basali femoribus tibiisque concoloribus, antennis (articulo basali excepto) capite tarsisque dilutioribus, prothorace plus minus infuscato; corpore subtus (capite excepto) nigricanti; prothorace quam latiori paullo longiori, ab apice ad medium sat cylindrico, a medio ad basin leviter rotundato-ampliato, supra vix inæquali, crebre subtiliter ruguloso; elytris modice (quam prothorax minus crebre minus subtiliter) rugulosopunctulatis, costis discoidalibus binis sat parallelis instructis. Long., $3\frac{1}{3}$—$3\frac{3}{4}$ l.; lat., $\frac{3}{5}$ l.

Very distinct from the previously described species of the genus by reason of the dark ferruginous general colour of its upper-surface, the elytral costæ being concolorous and only the head exhibiting a brighter reddish tone.

Fraser Range; I have this species also from S. Australia.

MICROTRAGUS.

M. maculatus, Blackburn. Nilpena or thereabouts.

HEBESECIS.

H. fasciculatus, sp. nov. Niger, tomento nigro-griseo et fusco variegatus, antennarum basi tibiisque nonnullorum exemplorum rufescentibus; capite prothoraceque spinoso confertim punctulatis; elytris profunde seriatim punctulatis, in dorso pone basin tuberculo nigro-fasciculato et altero minori pone medium ornatis; antennis pubescentibus, pube in articulis 3° 4° 5° 7° que ad basin, 6° 8° que totis albida. Long., $4\frac{1}{5}$—5 l; lat., $1\frac{3}{5}$—$2\frac{1}{5}$ l.

This species seems very distinct from any other yet described. The arrangement of the colours of the tomentum on the upper surface is very much as in *H. australis*, Boisd., but the pubescence of the sides of the prothorax (which has no dorsal impres-

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sion) is of a pale-greyish colour, and the antennæ are very differently coloured; the basal half (or more) of joints 3 and 4, the basal one-third of joints 5 and 7, and the whole of joints 6 and 8 being clothed with whitish pubescence, joints 9 to 11 and the appendiculate 12th joint being of an obscure patchy colour inclining more or less to grey or blackish in different examples. The pubescence of the underside and legs is whitish, and is somewhat close and even, scarcely interrupted or spotted except by the very coarse granulose-puncturation of the meta-sternum. The antennæ are about half again as long as the body in the male, not much longer than the body in the female. Of the other species of the genus having pilose elevations on the elytra *H. basalis*, Pasc., is very differently coloured and has only one elevation on each elytron; *H. cristata*, Pasc., *inter alia* has the antennæ of the male more than twice as long as the body, and *H. niphonoides*, Pasc., has two costæ on the elytra and the tibiæ marked with rings of brown pilosity. The posterior elevations on the elytra in this species are much smaller than the anterior ones, but are quite well-defined.

Fraser Range; also in my collection from other places in W. Australia.

SYMPHILETES.

S. fraserensis, sp. nov. Ferrugineus, capite antennis femoribus tibiis prothorace antice ad latera scutello et corpore subtus (lateribus summis exceptis) albido-pubescentibus, elytris fulvo-pubescentibus, pone et circa scutellum et in sutura griseo-pubescentibus (linea suturali serie macularum nigrarum variegata), ad latera vitta niveo-argentea lata ornatis (hac a basi apicem attingenti, ad basin breviter angustata, margine superiori insigniter serrato) humeris fere nigris; antennis quam corpus maris paullo longioribus, feminæ vix brevioribus; prothorace leviter transverso, subcylindrico, minus inæquali, supra sat crebre sat subtiliter rugato; elytris leviter minus subtiliter punctulatis, in parte dimidia basali sat fortiter granulatis, ad apicem leviter emarginatis barbatis; coxis anticis inermibus. Long., 8 l.; lat., $2\frac{3}{5}$ l.

The inequality of the surface of the prothorax is very slight and ill-defined, consisting of little more than a transverse depression near the front, and another (the stronger of the two) near the base. The prothorax has no indication of tubercles except a small tubercle (or large granule) on each side near the front. The most distinctive characters of this species seem to be the dense white pubescence entirely clothing the head and antennæ, the very conspicuous leaden-grey pubescence of the suture bearing (on each elytron) a row of round black spots, and

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the lateral band of a silvery-white colour. The upper margin of this band rises from the front extremity of the lateral margin, and runs obliquely hindward, and towards the suture to a point immediately behind the black humeral callus, whence it runs in a straight line (parallel with the suture) to the apex; it is marked with about a dozen sharply-defined little indentations, each of which is occupied by a granule or large puncture. Several species previously described resemble this one more or less closely, especially in the combination of a prothorax devoid of strong transverse folds with elytra ornamented laterally with snowy-white pubescence. I have in my collection examples of nearly all of them, but as in the instance of one or two there is a possible doubt of their being correctly identified, I will content myself with mentioning the following characters in which (according to their description) they differ *inter alia* from the present insect. *S. Bathursti*, Pasc., has two small central tubercles on the prothorax, *decipiens*, Pasc., is of a greyish-green colour and has a small triangular dark spot behind each eye, *derasus*, Pasc., has six feeble tubercles on the prothorax, *Duboulayi*, Pasc., has the lateral snowy pubescence of the elytra in the form of an oblong spot, *iliacus*, Pasc., is a smaller insect of dark olive-green colour, *lateralis*, Pasc., has the general pubescence of the head fulvous.

Fraser Range.

S. fumatus, Pascoe. Fraser Range.

S. vestigialis, Pascoe. Fraser Range.

PHYTOPHAGA.

DITROPIDUS.

D. cistellus, Germar. Fraser Range.

D. histeroides, Suff.? Fraser Range.

CHRYSOMELA.

C. australica, sp. nov. Elongata; parallela; nitida; convexa; ænea, labro palpis antennis pedibus elytrorumque epipleuris rufescentibus; capite lato minus convexo, sat crebre sat fortiter punctulato, inter oculos fovea sat magna impresso; oculis obsoletissime nec subtiliter granulatis: prothorace transversim subquadrato, quam elytra parum angustiori, sparsim minus fortiter (ad latera paullo magis fortiter magis crebre) punctulato; elytris seriatim punctulatis, interstitiis vix perspicue transversim strigosis. Long., $3\frac{1}{2}$ l.; lat., $1\frac{3}{5}$ l.

This species is clearly, I think, a member of Dr. Baly's genus *Carystea*, which Dr. Chapuis regards as inseparable from *Chrysomela*. If the eyes of all the previously described species are like those of the present one, I think Dr. Baly's genus may

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be maintained; the granulations are not particularly fine, but are so extremely faint as to appear almost non-existent without the use of a powerful lens. This species is probably near *C. micans*, Baly (which I have not to my knowledge seen), but is considerably larger and *inter alia* the puncturation of the sides of its prothorax is not in the least variolose.

Fraser Range.

CHALCOLAMPRA.

C. eremita, sp. nov. Ovalis; picea, capite rufo, antennis palpis pedibusque brunneo-testaceis, prothorace elytrisque obscure æneis; prothorace duplo-punctulato; elytris sat subtiliter striatis, striis sat fortiter punctulatis, interstitiis sublævibus vix planis. Long., $2\frac{2}{5}$—$2\frac{1}{2}$ l.; lat., $1\frac{2}{5}$ l.

The third joint of the antennæ is not much less than half again as long as the fourth joint. The head is somewhat strongly but not at all closely punctulate, and has a fovea on either side near the front. The prothorax is two-thirds again as wide as long, and is considerably narrowed forward; it bears both fine and also considerably larger punctures (both kinds sparsely distributed except near the sides, where the larger punctures are much closer). The evident (though not strong) convexity of the interstices associates this species with *C. Hursti*, Blackb., from which it differs *inter alia* by the less strongly rounded sides and the narrower front of its prothorax, as well as by its smaller size. Compared with *C. acervata*, Germ., (which is perhaps the same as *ænea*, Boisd.) the antennæ are much less stout, with the third joint proportionally longer; the prothorax is much more narrowed in front and much less coarsely punctured; the elytra are very similar, except in the interstices not being quite flat; and the puncturation of the under-surface does not appear to differ in any notable manner.

Fraser Range.

CALOMELA.

C. satelles, sp. nov. Oblonga; pallide fulva, antennis apicem versus nigris, elytris vitta discoidali plus minusve perspicua violacea ornatis; capite rugulose (quam *C. coloratæ*, Germ., multo minus crasse) punctulato; prothorace quam longiori plus quam duplo latiori, crasse fortiter (in medio quam *C. coloratæ* minus crebre) punctulato; elytris fortiter (quam *C. vittatæ*, Baly, vix minus fortiter) punctulato-striatis. Long., $2\frac{2}{5}$—3 l.; lat., $1\frac{1}{5}$—$1\frac{2}{5}$ l.

A very distinct species, easily distinguished from its congeners with fulvous elytra bearing a vitta of metallic colour by the following characters in combination:—Colour entirely pale fulvous, except the apical part of the antennæ and the dusky-violaceous

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vitta of the elytra, prothorax coarsely punctured (after the manner of that of *C. colorata*, Germ.), elytra regularly punctulate-striate (except a little confusion in the dorsal rows) as in *C. vittata*, the punctures extremely deep and large (almost as in *C. vittata*, much more coarse than in *C. colorata*, *C. Kirbii*, &c.).

Fraser Range; I have the same species from various localities in S. Australia.

C. imperialis, sp. nov. Oblonga; nigra, supra splendide viridi-cyaneo-aureo et purpureo-micans, pedibus æneo- et cupreo-iridescentibus, antennis ad basin rufis; capite magno sat crebre sat fortiter punctulato, longitudinaliter subtiliter canaliculato; prothorace quam longiori plus quam duplo latiori, sat fortiter sat sparsim (ad latera magis crasse minus sparsim) punctulato, postice quam antice fere tertia parte latiori; elytris vix striatis seriatim sat fortiter punctulatis, interstitiis fere lævibus. Long., 4 l.; lat., $2\frac{1}{8}$ l.

A remarkably handsome species, very distinct from its previously described congeners. The blending of the iridescent colours on the upper-surface is almost too intricate for detailed description; on the head there are four transverse, not sharply-defined, zones of colour as follows (from the hinder part forward): —golden, purple, cyaneous, purple; on the prothorax the zones are longitudinal, being purple in the middle, and on either side successively green, purple, green. On each elytron, starting from the suture, there are longitudinal vittæ as follows:—purple, green, purple, green, purple, green. The wings are of a rich crimson colour. The head is singularly like that of *Chrysomela* (*Carystea*), except in its eyes being more strongly granulated; indeed, the insect bears a strong general resemblance to *Carystea*, with the claws of a *Calomela*.

Nilpena, or thereabouts.

PAROPSIS.

P. lateralis, sp. nov. Breviter ovalis; minus nitida; nigro-picea, capite prothorace elytrorum margine laterali pedibus antennarum basi et maculis 2 (in segmento ventrali apicali positis) ferrugineis; capite fortiter subrugulose punctulato; prothorace quam longiori triplo latiori, sat subtiliter sat crebre (ad latera crasse confertim) punctulato, lateribus sat arcuatis; elytris sat fortiter vix seriatim punctulatis et lineolis sublævibus nonnullis instructis. Long., $5\frac{1}{8}$ l.; lat., $4\frac{1}{8}$ l.

This species belongs to Dr. Chapuis' "second division" of the genus; none of the described species in that division bear much resemblance to it.

Nilpena, or thereabouts.

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P. squiresensis, sp. nov. Ovata; minus nitida; nigro-picea, labro antennis pedibusque rufescentibus; capite prothoraceque sat fortiter sat crebre punctulatis; hoc ad latera magis crasse punctulato, quam longiori paullo magis quam duplo latiori, lateribus sat arcuatis, postice quam antice vix dimidio latiori; elytris crassissime rugulose punctulatis, in parte dimidia apicali sat crebre (apicem versus creberrime) verrucosis. Long., 3½—4 l.; lat., 2—2⅖ l.

This species is a member of Dr. Chapuis' "fourth division" of the genus. In shape it resembles *P. caliginosa*, Chp., except in its prothorax being very evidently less transverse; the prothorax is much more closely and evenly punctured, and the elytra are very differently sculptured, there being no defined tuberosities on the anterior half, but numerous closely and irregularly placed ones on the posterior half, especially near the apex.

Mount Squires.

P. nigropicta, Clk. ? Several specimens appertaining to an extremely variable species appear to be the insect to which it is probable that Mr. Clark gave this name. No individual among them agrees exactly with the description, and no two of them are quite identical *inter se*. They are of a bright red colour with black markings, which vary considerably in size and shape. In some the labrum is black (as in Clark's description), in others red, in some the legs are red with dark markings (as in description), in others almost black, and the colour of the under-surface varies from red (as in description) to nearly black. The species to a casual glance bears a remarkable resemblance to *Coccinella repanda*, Casstroem.

P. variabilis, Chp., var. ? West of Fraser Range. The prothorax seems a little more closely and strongly punctured than in S. Australian examples, and it is possible this may indicate a distinct species.

MENIPPUS.

M. elegans, Blackb. As noted (in Proc. Linn. Soc. N.S.W., 1890, p. 362) the structural characters of this insect do not agree quite satisfactorily with those of the typical species of *Menippus*.

Nilpena; on flowers of *Santalum acuminatum*.

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BROSCIDES

(SUB-FAM. OF COLEOPTERA).

By THOMAS G. SLOANE, F.E.S.

Before dealing with the species of the sub-family *Broscini* which follow, it is necessary to offer some remarks on the classification of those Australian Broscides which are characterised by having the sinus of the mentum without any median tooth-like projection. These are comprised in five genera, viz., *Gnathoxys* (Westwood), *Parroa*, *Adotela*, *Cerotalis* (Castelnau), and *Brithysternum* (Macleay, W.). It is only with those species that fall into the genera *Parroa*, *Adotela*, and *Cerotalis* that we are at present concerned. In forming these three genera, Count de Castelnau (Trans. Roy. Soc. Victoria, VIII., 1868) relied entirely on features belonging to the male to separate them from one another. The differences he gives may be tabulated as follows :—

Male with last joint of palpi thick, oval, truncate; anterior tarsi not clothed with spongiose tissue below. *Parroa.*

Male with last joint of palpi securiform; three basal joints of anterior tarsi with spongiose tissue below. *Adotela.*

Male with last joint of palpi truncate; four basal joints of anterior tarsi with spongiose tissue below. *Cerotalis.*

The late M. Putzeys, in monographing the *Broscini* in 1868 (Stett. Ent. Zeit.), united Castelnau's genus *Cerotalis* with *Promecoderus*, but followed that author in maintaining *Parroa* and *Adotela* as separate genera. Returning to the subject in 1873, he reviewed the Broscides of the Castelnau collection (Ann. Mus. Civ. Genov., IV.), when he still united *Cerotalis* with *Promecoderus*, and also united *Parroa* with *Adotela*, believing the genus *Parroa* had only been founded on female specimens of *Adotela*. He remarks (p. 337)—"Toutes les *Parroa* de la collection sont des males et les *Adotela* females ne différent pas des *Parroa*,"

In 1890, when reviewing the genus *Promecoderus* and the Australian Broscides allied to it (Proc. Linn. Soc. N.S.W. (2), V.), I regarded (as I still do) *Cerotalis* as distinct from *Promecoderus*, but I united *Parroa* with *Adotela*, remarking (p. 229) :—"When de Castelnau wrote on the Australian *Broscini* in 1867, he was misled by the very different form of the palpi in the different sexes of this genus, and formed a separate genus for each sex." In extenuation of my mistake in thus misrepresent-

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ing the value of Castelnau's observations on these insects, I can only plead that I thought M. Putzeys' evidence that all the species of *Parroa* in the Castlenau collection when he went over them in 1873 were females, was conclusive proof Castelnau was in error in attributing to the males of *Parroa* nonsecuriform palpi and non-spongiose anterior tarsi.

I have now seen three species in which the male is certainly without spongiose tissue on the underside of any joints of the tarsi; so it is evident Castelnau was right. Either such male specimens must have been lost before M. Putzeys looked through the Castlenau collection; or he spoke after a mere superficial examination of the specimens before him, when he said all the species of *Parroa* were females.

I am now able to make a considerably more extended review of the forms comprised in the genera *Parroa*, *Adotela*, and *Cerotalis* than in 1890; but my knowledge of the previously described species is confined to so few species that I can suggest no alteration in their classification, nor can I find any decided differences, apart from sexual characters, between them. Genera founded entirely on features appertaining to one sex seem to me too artificial to be maintained in a natural system of classification; but, when our knowledge of a group is too slight to enable us to divide it into genera of undoubted natural value, an artificial system must be adopted, and this seems such a case. As will be seen from my remarks on the genus *Parroa*, which follow, I am doubtful of the position of many species; but the material I have clearly indicates that, either all the species now placed in the genera *Parroa*, *Adotela*, and *Cerotalis* will have to be united in one genus, or new genera will in all likelihood be required for *Parroa (Adotela) australis*, Sl., and similar forms; for *Parroa apicalis*, Sl.; and possibly for *Adotela Frenchi*, Sl. There seems little doubt but that we may expect many new species of *Broscini* to be found in Australia, which, when obtained, will enable us to determine the true classificatory value of the differences between forms such as those on which the genera *Parroa*, *Adotela*, and *Cerotalis* have been established. In the meantime, to make new genera for apparently aberrant forms would in all probability merely cause confusion and instability of nomenclature, troubles already only too rife in zoology.

Genus Parroa.

I regard *P. Howitti*, Casteln., as the type of the genus *Parroa*; with it may be associated *P. grandis*, Casteln., and *P. noctis*, Sl. (n. sp., *vide post*). These species seem united by a similarity in the form of the labrum, antennæ, femora, posterior trochanters, tarsi, &c.; but, as the male of neither *P. grandis* nor

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P. Howitti has yet been recorded, there must remain some doubt as to the amount of affinity amongst them.

Adotela australis, Sl. (which I now know to have the male with non-securiform palpi, and non-spongiose anterior tarsi); *Adotela atronitens*, Sl. (which is too closely allied to *Parroa australis*, Sl., to be disassociated from it); and *Parroa lævigata*, Sl. (n. sp., *vide post*), form a group distinguished from the *P. Howitti* group by their emarginate labrum, lighter and less flattened femora, not channelled below for their whole length; narrower posterior tarsi, with apical joint narrowed to base; short very obtuse posterior trochanters; bordered basal margin of prothorax, &c. *Parroa apicalis*, Sl. (n. sp., *vide post*) may possibly be an *Adotela*; in any case it has but little affinity to either of the groups mentioned above. Three other species have been referred to the genus *Parroa* by De Castelnau, viz., *P. carbonaria*, Casteln.; *P. violacea*, Casteln.; and *P. bicolor*, Casteln. These are only known to me by too short descriptions, but I should think *P. carbonaria* was rightly placed in *Parroa*, while *P. violacea* and *P. bicolor* may likely prove species of *Adotela* when the male is reported. Three species of *Adotela*, viz., *A. strioluta*, Putz.; *A. nigerrima*, Macl., and *A. frenchi*, Sl., have been described without any notice of the male. I should think it quite likely that they will all prove to have the male characters those of *Parroa* rather than of *Adoleta*, but they must remain in the latter genus till the male is recorded.

Parroa grandis, *Castlenau.*

Trans. Roy. Soc., Victoria, 1868, VIII., p. 174; Putzeys, Stett. Ent. Zeit., 1868, p. 350; *Adotela grandis*, Putzeys, Ann. Mus. Civ., Genov., 1873, IV., p. 337; Sloane, Proc. Linn. Soc., N.S.W., 1890 (2), V., p. 237.

Female.—Form broad, convex, robust. Black, shining. Head broad, short (6 x 6·5 mm.), smooth, excepting a slightly rugulose shallow impression on each side between the eyes; clypeal suture distinctly impressed, curved; clypeus truncate, declivous in front, a small puncture on each side very near the edge; eyes round, convex, not prominent or inclosed behind. Mandibles short, strong. Labrum short, without median sulcus; anterior angles quite rounded off; middle of anterior margin truncate. Antennæ short, thick, subfiliform; the joints very little flattened, second shortest—shorter than the fourth—last oval, pointed at apex. Prothorax broader than long (8·5 x 10·5 mm.), widest about halfway between the marginal punctures, lightly and shortly narrowed behind, convex (the disc a little depressed), not declivous behind, longitudinally rugulose near anterior and basal margins (the rugæ of the basal part stronger and more irregular); anterior

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margin somewhat sinuate between the lateral borders; base truncate, not bordered; anterior angles broadly and shortly advanced, obtuse, their inner margin very oblique; basal angles rectangular; lateral border *entire*,* thick, narrow in middle, widening in front to anterior angles, thicker and more prominent behind, not sinuate before the base: median line rather strongly impressed, not reaching anterior margin, losing itself in the rugulose part behind. Elytra smooth, broadly oval (18·5 x 11 mm.), subparallel on sides, shortly rounded to peduncle, broadly rounded behind, convex, declivous behind, hardly at all declivous to peduncle behind scutellum; suture deeply impressed on disc; border narrow, slightly wider behind; a row of unequally and rather widely-placed punctures at a little distance from the margin. Prosternum transversely and irregularly striolate in front of the coxæ, strongly declivous to anterior margin, not excavate between the coxæ, truncate behind. Inflexed part of pronotum projecting sharply beyond the episterna. Ventral segments covered with fine irregular scratches; apex rugulose. Femora broad, flattened, irregularly transversely striolate, longitudinally excavate below for whole length; posterior ones strongly dilatate on lower side behind the middle: anterior tibiæ wide at apex, ending externally in a dentiform projection, outer edge thin with one or two very minute projections; four posterior tibiæ dilatate at apex, their outer edge concave: posterior trochanters transversely striolate, oval, narrowed to apex and obtuse: posterior tarsi of moderate length; joints 1—4 successively shorter, first not as long as two succeeding ones together, last short, convex, hardly narrower at base.

Length, 29; breadth, 11 mm.

Habitat.—Murchison District, West Australia.

This is the largest species of the genus, its affinity is to *P. Howitti*, Casteln., from which its greater size and broader form help to distinguish it. I have only seen the specimen described above, and have been unable to compare it with *P. Howitti*.

The description above may be supplemented by reference to the following points, the value of which, though I have found them worthy of notice in separating the species of *Parroa* and *Adotela*, I have not been able to satisfactorily determine from want of a sufficient number of specimens to examine. The sinus of the mentum is bordered, thus causing the bottom of the emargination to assume a lightly bisinuate form, the middle being

*The lateral border of the prothorax being sometimes (as in *Adotela Frenchi*, Sl.) obsolete before reaching the base, I have, for the sake of brevity, thought it convenient to call it *entire* when it reaches uninterruptedly along the sides from the anterior to the basal margin.

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somewhat produced; the penultimate joint of the labial palpi is plurisetose in front and dilatate towards the apex; that of the maxillary palpi is short and triangular, with a seta projecting forward internally; these features are found in other species of the genus and also in some species of *Adotela*. The puncture usually found among the CARABIDÆ towards the outer side of the anterior femora, near the apex, is wanting.* The posterior coxæ have only a single puncture on each near the inner margin, a little before the insertion of the trochanters.† In all allied species known to me this puncture is present. In the specimen before me the anterior part of the clypeus is covered with minute punctures.

Parroa noctis, *spec. nov.*

Form rather elongate, convex, robust, smooth on upper surface. Entirely of a deep shining black. Head large (6 x 6 mm.), convex, smooth; frontal impressions obsolete; clypeal suture lightly marked, extending forward obliquely on each side; clypeus truncate, a foveiform puncture on each side; eyes convex, not prominent or inclosed behind. Mandibles strong, elongate. Labrum prominent, subrotundate in front, longitudinally sulcate in middle. Antennæ rather thick, filiform; basal joint‡ thick, second shorter than fourth, last narrow, fusiform. Prothorax very little broader than long (8·75 x 9·25 mm.), widest rather before the middle, gently and but little narrowed behind, lightly convex, not declivous behind; basal part defined by a shallow broad

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* I believe the presence or absence of this puncture (which I propose to call *the external apical puncture* of the anterior femora) to be of some classificatory value among the CARABIDÆ; its presence is invariable in all the Australian Broscides I have seen, excepting the present specimen. If normally absent in *P. grandis*, it seems probable its loss is owing to the rugosity of the part of the femur where it is usually found. It is almost obsolete in *P. noctis*, Sl.

† The punctures found on the posterior coxæ of nearly all the CARABIDÆ seem capable of use in classification, but I have not been able to find that they have yet been so used, or to come to any definite conclusion as to how much value attaches to them. The usual number of these punctures among the CARABIDÆ seems to be three; and, as one, two, or all three of these may be wanting, it appears necessary if they are to be referred to, for them to be named. I therefore propose the names—(a) *anterior puncture*, (b) *apical puncture*, (c) *inner marginal puncture* of posterior coxæ; according as they are placed—(a) at about half the breadth of the anterior part of the coxa, (b) near the apex of the coxa, (c) near the inner margin of the coxa a little before the insertion of the trochanters. When all three punctures are present the coxæ may be called *tripunctate*.

‡ It may be noted that in this species the setigerous puncture usually so conspicuous on the upper side (towards the apex) of the basal joint of the antennæ among the CARABIDÆ is wanting. This puncture may prove of classificatory value in some groups of the CARABIDÆ. *P. noctis* is the only Broscide that has come under my notice in which it has been wanting.

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impression reaching almost to the sides at their posterior sinuosity; anterior margin truncate between the lateral borders; base truncate, not bordered; anterior angles advanced, obtuse, their inner margin slightly oblique; basal angles rectangular; lateral border *entire*, thick, gradually widening in front from anterior marginal puncture, narrower and equal backwards from that puncture, lightly sinuate before the base; median line lightly impressed, not reaching either margin. Elytra smooth, oval (16·5 x 10 mm.) subparallel on sides, gently rounded to peduncle and to apex, convex, very declivous behind, hardly at all declivous to peduncle behind scutellum; suture lightly impressed; border narrow, becoming wider behind; a row of unequally and widely-placed punctures at a little distance from the margin. Prosternum transversely impressed in front of coxæ, rounded behind and projecting slightly backwards, not excavate between coxæ, sharply declivous to anterior margin. Ventral segments smooth, impunctate. Femora broad, flattened, very lightly channelled below for whole length; posterior ones strongly dilatate on lower side behind middle: anterior tibiæ with external edge smooth, not ending in a dentiform projection at apex; four posterior tibiæ dilatate at apex, their outer edge not concave: posterior trochanters (in the male) very long, pointed, bent inwards near apex: posterior tarsi short, thick; joints 1–4 successively shorter—first, short (not as long as two succeeding ones together), 2–4 short, broad, turbinate, last convex, not narrowed to base.

Length, 28; breadth, 10 mm.

Habitat.—Murchison District, West Australia.

This species is readily distinguished from *P. grandis*, Casteln., by its more elongate form. Five specimens have come under my notice; three of these agree in all particulars with the description given above, and one of these is certainly a male. The other two are females, and differ from the description only in the shape of the posterior trochanters, which are almost as in *Parroa grandis* (female), being oval and narrowed to the bluntly-pointed apex, and not elongate, narrow, and bent as in the other specimens. The elongate bent posterior trochanters seem peculiar to the male; the male of both *P. grandis* and *P. Howitti* may be expected to have similar trochanters. The posterior coxæ in all these specimens have each a single puncture near the inner margin a little before the insertion of the trochanters. The male alluded to above I have received very recently from Mr. French, of Melbourne, as coming from the Gnarlbine Goldfields, W.A. It is a fresh and perfect specimen, and has the apex of the anterior tibiæ fringed on their inner side with fulvous hair and produced forward in a strong spur about half as long as the inner apical

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spur. (I find the same feature, though in a less marked degree, in the type specimen of *Adotela Frenchi*, Sl.)

Parroa lævigata, *spec. nov.*

Form light, elongate; dorsal surface lævigate. Shining black.

Male.—Head large, not narrowed behind eyes, occipital part smooth, wide, convex; a broad shallow impression on each side between the eyes extending forward to the clypeus; front convex between these impressions; clypeal suture indistinct; clypeus very lightly emarginate in front, a shallow triangular impression on each side, having a setigerous puncture placed at its inner angle; eyes round, convex, not prominent or inclosed behind. Labrum short, lightly emarginate and sexsetose in front; the anterior angles rounded; median sulcus wanting towards anterior margin, but perceptible near clypeus. Penultimate joint of maxillary palpi short, triangular, with a short erect seta on inner side; last joint a little flattened, lightly narrowed to apex, truncate; penultimate joint of labial palpi with two setæ in front and two shorter ones (one on each side) at apex; last joint broad, hardly narrowed to apex, truncate; external edge arcuate. Antennæ slender, submoniliform; second joint shorter than fourth; last short, obtuse. Prothorax subcordate, as long as broad (5 x 5 mm.), widest a little before the middle, convex, lightly declivous behind; sides subparallel between the marginal punctures, shortly rounded to anterior angles, lightly narrowed behind; base truncate; anterior margin truncate between anterior angles; these shortly but decidedly advanced; basal angles rectangular; marginal border narrow, a little widened in front to form the anterior angles, very narrow on sides near base, lightly sinuate before the base, wider, less reflexed, and entire on base; median line lightly impressed; a well-marked oblique line extending from each anterior angle about one-third across the prothorax just behind the anterior margin. Elytra oval (9 x 5·5 mm.), convex, lightly declivous behind, declivous to peduncle behind scutellum; sides subparallel in middle; shoulders rounded off; apex broadly rounded; suture strongly impressed; lateral border narrow, equal; a single puncture at the base of each elytron; three lateral punctures on each side, one behind the shoulder, the other two a little distance apart where the apical curve of the elytra begins. Prosternum deeply excavate between the coxæ, not produced backwards behind them, smooth in front of coxæ; anterior margin bordered. Ventral segments smooth, without lateral impressions, ambulatorial setæ present, two punctures on each side of anus. Legs light: femora not channelled below; anterior dilatate in middle, posterior with lower side not produced in middle: anterior tibiæ with apex wide and forming a

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sharp dentiform projection externally: posterior trochanters broad, short, widely rounded at apex: tarsi narrow, without spongiose tissue on underside of anterior ones: posterior elongate; joints 1-4 successively shorter—first, long, about as long as two succeeding ones together, last narrowed to apex.

Length, 15·5; breadth, 5·5 mm.

Female differing from male in its rather lighter form; smaller head; prothorax proportionately narrower than elytra (4·25 x 4·25 mm.); elytra more convex and less widely rounded behind (8·75 x 5·25 mm.); last joint of the palpi narrower.

Length, 14·5; breadth, 5·25 mm.

Habitat.—Barrow Range, Central Australia. Two specimens, male and female.

This species is allied to *P. australis*, Sl., and *P. atronitens*, Sl., from both of which species it may readily be distinguished by the slightly projecting anterior angles of the prothorax, by both prothorax and elytra being less rounded at the middle of their length, and by the decidedly impressed suture of the elytra. These three species all have the posterior coxæ tripunctate.* *P. carbonaria*, Casteln., a black species from West Australia, very little larger than the present, I have never seen; it differs by description in having the labrum rounded.†

Parroa apicalis, *spec. nov.*

Form broad, convex; upper surface smooth, excepting apex of elytra. Black, shining. Head large (5·25 x 5·25 mm.), smooth, wide, but not swollen behind eyes; front with two well-marked long parallel impressions extending to margin of clypeus near its anterior angles; clypeal suture fine, bent forward sharply on each side, a small puncture on each side at the angles made by the lateral bend; clypeus with anterior margin very lightly concave, a foveiform setigerous puncture on each side; eyes round, convex, not prominent or inclosed behind. Mandibles long,

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* See note, *ante* p. 207.

† I have lately obtained specimens (both male and female) of *Parroa australis*, Sl., as coming from South Australia, but without exact locality. I am therefore able to report that the male is comparatively broader than the female, the elytra having a shorter and more convex appearance. The maxillary palpi have the penultimate joint very short and triangular with a seta projecting forward on the internal side, the last joint oblong, thick, truncate, a little narrowed to apex; the labial palpi have the penultimate joint bisetose in front, and without setæ at apex, the last joint thick, arcuate externally, narrowed to apex, truncate. The legs are light, the anterior femora slightly dilatate in middle, the anterior tarsi not dilatate or with brushes of spongiose tissue on underside; the posterior tarsi narrow: joints elongate, first long, hardly as long as two succeeding ones together, last elongate, narrowed to apex. Length, 15·5; breadth, 5·5 mm. Specimens before me vary in length from 14·5 mm. to 17 mm.

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acute. Labrum canaliculate; anterior angles lightly rounded; margin sexsetose, lightly concave. Antennæ filiform; second joint as long as fourth. Prothorax broader than long (6·75 x 7·5 mm.), subparallel on sides, narrowed to base, subconvex, slightly declivous behind; the basal part defined by an entire obsolete impression; median line finely but distinctly impressed, crossed along its whole length by very fine striolæ; sides covered with minute transverse striolæ; anterior margin very lightly sinuate between lateral borders; base truncate, lightly bordered on each side near basal angles; anterior angles rather strongly advanced, narrowly obtuse, their inner margin almost straight; basal angles rather acute, projecting a little backwards and downwards; lateral border rather wide, with thick reflexed edge, widening in front from a little behind anterior marginal puncture, bent downward before the base, a little narrower after the sinuosity thus caused. Elytra ovate (12 x 8·5 mm.), widest rather behind the middle, convex, declivous to peduncle; posterior part declivous, and rugose towards apex; sides subparallel in middle, lightly rounded to peduncle, broadly rounded at apex; suture fine, very narrowly impressed; border narrow on sides, wider behind; two fine punctures on margin at shoulder, none along sides, a few near edge of posterior-third, becoming lost in the apical rugosity. Prosternum smooth, sloping gently to anterior margin; base emarginate; episterna very finely transversely striolate under a lens. Ventral segments smooth, excepting for a few scattered scratches; segments 3–6 lightly impressed on sides, these impressions very shallow and wide, more distinct on two apical segments. Legs light: femora excavate below only near apex; anterior rather wider, a little flattened; posterior long, not dilatate in middle: posterior trochanters short, obtuse at apex: posterior tarsi narrow; joints elongate, first long (about as long as two succeeding ones) last long, cylindric, narrowed to base.

Length, 21; breadth, 8·5 mm.

Habitat.—Australia (exact place of capture uncertain). In the collection of Rev. T. Blackburn.

This species seems an isolated one by its facies, and the form of the basal angles of the prothorax, before which the lateral border slopes sharply downwards, causing them to become acute. The elytra are much broader behind than in any other species I have seen, and far more strongly rugose towards the apex; this rugosity extends over most of the posterior declivity. The emargination of the mentum is quite edentate and even rounded behind. Only the labial palpi are present in the specimen before me; they are more slender than in any other *Parroa* I have seen; the two last joints are of about equal length, the last is

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truncate at apex, greatly narrowed to base, and a little arcuate externally. The ventral segments have distinct lateral foveæ, and the apical one is without any punctures at the sides of the anus; characters I have not before seen in the genus. The emargination of the prosternum behind the coxæ is an unusual feature in the genus. The "anterior" and "inner marginal" punctures of the posterior coxæ only are present.*

Adotela esmeralda, *Casteln.*

Loc. cit., p. 175; Putzeys, Ann. Mus. Civ. Genov., IV., p. 340; Sloane, loc. cit., p. 234.

Female.—Form oval, very convex; suture of elytra not forming a depression; anterior angles of prothorax very slightly advanced; upper surface lævigate, excepting apex of elytra.

Very shining, general colour black, elytra blackish-green, the green tint becoming bright on sides and inflexed part, a green flush along upper lateral margin of prothorax, also on most of its under-parts. Head smooth, excepting clypeus, large (4 x 4·25mm.), convex, wide, but not swollen behind eyes; front with two broad, shallow impressions diverging a little behind and extending forward across the clypeus, the space between these impressions lightly convex; clypeal suture very fine, interrupted in frontal impressions, bent forward at each side, a fine puncture on each side at the angle made by the lateral bend; clypeus a little rugulose, the lateral setigerous punctures shallow, not near edge; eyes round, convex, not prominent or inclosed behind. Labrum short, lightly emarginate; anterior angles rounded. Antennæ filiform; second joint shortest, though only a little shorter than fourth. Prothorax short (5·5 x 6·25 mm.), convex, slightly declivous behind; basal part defined by a light transverse impression not reaching to near the margins; sides rounded, very little narrowed in front, shortly but decidedly so behind; anterior margin truncate between lateral borders; base truncate, with only a slight trace of a border on each side near margin; anterior angles obtuse, very little advanced, their inner margin sloping backwards very gently; basal angles rectangular; lateral border *entire*, narrow, a little sinuate before the base; median line lightly impressed on disc. Elytra smooth, excepting a little rugosity near apex, oval (11·5 x 7·25 mm.), very convex, declivous to the peduncle, and strongly so behind; sides lightly rounded, a little more shortly so to base than to apex; suture fine, not impressed; border very narrow on sides, widening continuously, and becoming broadly reflexed from posterior-third to apex; marginal punctures wanting on middle of sides (two or three near shoulders, and four or five on posterior-third). Prosternum

* See note, *ante*, p. 207.

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gently declivous in front to anterior margin, not excavate between the coxæ; base round, with a small projection behind. Ventral segments smooth. Legs light: femora—anterior thickest, flattened; intermediate narrow, longer than anterior; posterior widest in middle, a little sinuate before apex on lower side: tibiæ—anterior wide at apex, ending externally in a strong dentiform projection, external edge smooth; intermediate with outer edge concave, dilatate at apex, and ending externally in a flattened pointed projection: posterior trochanters smooth, short, regularly oval: posterior tarsi narrow, elongate; joints 1–4 successively shorter, first about as long as two succeeding ones together, last not elongate, convex, hardly narrowed to base.

Length, 19; breadth, 7·25 mm.

Habitat.—Murchison District, W.A.

The described species that can be undoubtedly referred to the genus *Adotela* are *A. concolor*, Castlen., *A. esmeralda*, Castlen., *A. carenoides*, Putz., and *A. viridis*, Macl. The difference in colour is in itself sufficient to distinguish the first from the second, while the projecting angles of the prothorax at once separates both these from *A. carenoides* and *A. viridis*. In the specimen described above, the posterior coxæ have two punctures, the "apical" and the "inner marginal."*

AMYCTERINI.

FAM. CURCULIONIDÆ.

By T. G. SLOANE, F.E.S.

The *Amycteridæ* of the Elder Exploring Expedition number sixteen species, all belonging to that division of the family characterised by having the scape of the antennæ passing the eye. I regard all as undescribed species; of this I feel the more confident because I have been able, during a hurried visit to Sydney, to compare them with the types of the Amycterides described by the late Sir William Macleay, and so to assure myself that none was among the species of that author.

It is not easy to determine the previously-described *Amycteridæ*, owing partly to the close resemblance of many of the species making their exact description difficult, and partly owing to the lamentable conciseness former authors have adopted in diagnosing their species. To their too-brief descriptions they all, unfor-

* See note, *ante*, p. 207.

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tunately, seem to have added the fault of carelessness, particularly in apparently guessing at the sex of their specimens; this is shown by their sometimes giving characters that evidently belong to a female, as those of a male, and *vice versa*. No description of an Amycteride is of practical use unless the sex of the insect described is ascertained beyond any doubt, and given. The sex of all the specimens described in the following paper has been determined with certainty. This may be done very easily by relaxing the specimen and examining the pygidium, which in the male (as in the *Otiorhynchidæ*) is transversely divided, so that there is a segment more on the upper side of the abdomen in the male than in the female.

There seem many features of importance that have been overlooked by former writers on the *Amycteridæ;* some of these have been used in the descriptions that follow, while others, that seem capable of use, have been passed over as being rather of generic than specific value, the use of such features tending to overload descriptions of species and detract from their perspicuity. No doubt some of the features used in the following descriptions (as the relative length of the apical ventral segment as compared to the two preceding ones together) are of more than mere specific value, yet they are of too obvious importance to be omitted from the description of a species; at least till they have been tabulated, and their true value determined; such a work would involve an exhaustive study of the *Amycteridæ*, and is quite beyond the scope of this paper.

I would note that, to my mind, the ocular lobes of the prothorax cannot be considered as having, among the *Amycteridæ*, the classificatory value attributed to them by Mr. Pascoe in his table of genera of the long-scaped *Amycteridæ* (Jour. Linn Soc., XII., 1873, p. 21). In the genus *Acantholophus*, while many species (*A. Marshami*, Kirby, &c.) have the ocular lobes well developed, others have them almost (*A. denticollis*, Macl., &c.), or quite (*A. granulatus*, Sl.) wanting; in *Cubicorhynchus*, too, the "lobes" are sometimes present, though generally wanting. For this reason, and, because the ocular lobes seem not really processes of the prothorax, but rather to be caused by the post-ocular sinuosity of the anterior margin, I have preferred to note the shape of the anterior margin without particular reference to the "lobes."

A reference to the humeral interstice of the elytra seems needful. Sir William Macleay, disregarding the sutural interstice, calls the humeral the fourth interstice, and when explaining his divisions of the genus *Sclerorhinus* (Trans. Ent. Soc. N.S.W., I., 1865, p. 335) remarks that the fifth is more properly a lateral interstice. It is evident the sutural interstice should be counted,

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and this causes the humeral one, in most Anycterides, to be strictly speaking the fifth; while the infra-humeral interstice, called by Sir William Macleay the fifth, should be considered as the sixth.

Genus Talaurinus.

There are eight species in the collection that may be referred to the genus *Talaurinus*, and, as far as I know, none is very closely allied to any previously described species.

Four *(T. regularis, T. solidus, T. Helmsi, T. æqualis)* are allied species showing a relationship to the "granulate" section of the genus; their sculpture is, however, much rougher than any "granulate" species known to me; they might be regarded as forming a separate *(roughly-granulate)* group. Though quite distinct species, all agree in general appearance, form of rostrum, and conformation of under-surface in both sexes.

The fifth species *(T. crassiceps)* seems quite *sui generis*.

The three remaining species *(T. obscurus, T. noctis, T. insignis)*, with a fourth species here described, but not belonging to the Elder Expedition collection *(T. convexus)*, are aberrant species that I cannot place in any of Sir William Macleay's sections of the genus; they are more allied to *T. rugiceps*, Macl., than to any other previously described species I have seen. *T. noctis, T. insignis*, and *T. convexus* have obvious affinities to the genus *Sclerorhinus* in the form of the rostrum and the conformation of the under-surface. It seems to me that the division of the *Amycteridæ* into genera founded chiefly on the form of the rostrum is too artificial to be much longer maintained. When a more natural system comes to be adopted it is probable these species will be removed from *Talaurinus*.

Talaurinus regularis, *n. sp.*

Oblong, very robust; prothorax granulate; elytra striate, the interstices regularly granulate. Black, the granules shining; spaces between the granules filled with fine cinereous scales, these thicker on elytra and forming a stripe along their margin; under-surface with cinereous-yellow scales down middle of ventral segments.

Rostrum short, narrower than head, deeply excavate, transversely impressed between external ridges at base; external ridges setigero-punctate, diverging a little in front, internal ridges obsolete — merely short processes of posterior-half of external ridges. Head broad, short, convex; front a little flattened behind rostrum; occiput with cinereous pilose scales.

Male.—Prothorax a little broader than long (5 x 5½ mm.), lightly and regularly convex transversely, lightly dilatate on sides, widest a little before the middle; disc very lightly convex

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longitudinally ; anterior margin strongly sinuate, middle rounded and projecting very lightly above head ; base truncate ; granules closely placed, round, unequal, separate, unisetigerous, extending on sides to near coxæ. Elytra ovate (11 x 7½ mm.), rounded on sides, dilatate behind middle, decidedly narrowed to shoulders, very strongly and rounded declivous behind ; convex towards each side, lightly convex longitudinally ; disc depressed along suture ; base lightly emarginate ; the shoulders advanced in a strong truncate tuberculiform projection; apex wide, without sinuosity or projections near suture ; striæ uneven at bottom, having along their course very small setigerous granules between the granules of the interstices ; dorsal interstices closely set for whole length with strong, separate, unisetigerous granules becoming conical and tuberculiform on posterior declivity ; granules of first interstice small, round, evenly placed ; third and fifth interstices with the granules forming a double row in places. Metasternum convex, much raised above the plane of the first ventral segment. First ventral segment very lightly, widely, and flatly hollowed between coxæ ; second flat ; second, third, and fourth with a very light oblique impression on each side; apical segment longer than two preceding ones together, deeply excavate: the excavation parallel sided, rounded at bottom, extending for whole length of segment; a short pointed tuft of bristles placed on each side of anal excavation between last ventral segment and pygidium. Legs light ; femora cylindrical, anterior without a ridge on lower side.

Length, 18 ; breadth, 7½ mm.

Female.—Differing from male in its broader, heavier, and flatter form ; prothorax less dilatate on sides, less convex (5 x 6 mm.) ; elytra much more depressed, less roundly and strongly declivous behind (12¼ x 8¼ mm.), the apex narrower ; granules of interstices weaker, less conical, those of third and fifth placed more evidently in a double row. The under-surface differing in the yellowish scales being absent from the middle of the first two ventral segments, and more thinly-set on the middle of the last three ; first segment not hollowed in middle ; second longer and convex ; second, third, and fourth without lateral impressions ; apical segment with a small round median impression.

Length, 19½ ; breadth, 8¼ mm.

Habitat.—Westward to Everard Range, S.A. May-June, 1891.

Compared with *T. æqualis*, Sl., this species differs by the elytra strongly rounded on the sides and convex longitudinally ; their sculpture more regular, the granules of the interstices being more even and more conical.

From *T. Helmsi*, Sl., it may be distinguished by its less convex form ; and wider elytra, more dilatate on the sides, with the

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granules more tuberculiform, giving the dorsal interstices a somewhat serrate appearance posteriorly.

Talaurinus solidus, *n. sp.*

Female.—Head rostrum, prothorax (5½ x 6½ mm), and under-surface not offering any decided difference from *T. regularis*, female. Elytra ovate (13 x 8½ mm.), widest behind middle, lightly rounded on sides, a little narrowed to base, strongly declivous behind, lightly convex transversely, very lightly so longitudinally; disc rather depressed, base lightly emarginate; shoulders advanced in a thick prominent tubercle; dorsal interstices closely-set for whole length with setigerous granules, these becoming tuberculiform on posterior declivity; granules of first interstice small, round, evenly placed, of second and fourth larger than those of other interstices, of third placed in a double row, except near apex, of fifth double near middle of length.

Length, 20; breadth, 8½ mm.

Habitat.—Westward to Everard Range. May, June, 1891.

Two female specimens. Closely allied to *T. regularis*, Sl. The following differences may be noted. The elytra more convex, less dilatate on sides, their sculpture more confused; the granules larger, flatter, more unevenly shaped, those of second and fourth interstices decidedly larger than those of others; fifth and sixth interstices almost straight, not deflexed posteriorly. In *T. regularis* the fifth interstice displays a decided convexity in its course, and the course of the sixth is also lightly convex.

Talaurinus Helmsi, *n. sp.*

Oblong-elliptical, subparallel; prothorax granulate; elytra striate, the interstices granulate. Black, the granules shining; the spaces between the granules sparingly filled with fine cinereous scales, these thicker on elytra and forming a stripe along their margin; head with darker scales, a few cinereous scales in middle and on each side above eyes; under-surface with a vitta of cinereous scales (not hair) down middle.

Rostrum short, excavate, without internal ridges, transversely impressed at base between external ridges, these setigero-punctate. Head broad, convex; occiput clothed with a thick velvety pile; front with short decumbent setæ. Antennæ long, slender.

Male.—Prothorax rather narrow (4½ x 5 mm.), lightly dilatate on sides, widest rather before the middle, lightly convex transversely, hardly at all so longitudinally; anterior margin strongly sinuate, middle rounded, but hardly projecting above head; base truncate; granules unequal, round, separate, unisetigerous, extending on sides to near coxæ. Elytra oval (11 x 6¾ mm.), widest rather behind middle, a little narrowed to shoulders, very

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declivous behind; sides subparallel; base subcircularly emarginate; shoulders projecting forward in a short, thick, truncate tubercle; apex rounded, without sinuosity or projections near suture; striæ very uneven, having along their course very small setigerous granules; dorsal interstices regular, formed of separate large shining unisetigerous granules, these becoming more prominent and conical on posterior-half of elytra. Metasternum flat. First ventral segment lightly and widely hollowed in middle; second flat in middle; apical segment longer than two preceding ones together, deeply and subcircularly excavate, the excavation regular, without sinuosities or rugosities, sparingly clothed with short erect setæ; apex of pygidium thick, lightly emarginate; a short tuft of reddish hair on each side of the anal aperture.

Length, 16½; breadth, 11 mm.

Female.—Differing from male in having the prothorax wider and less narrowed to base; the elytra more parallel, less dilatate on sides, less roundly declivous and more flattened behind. Under-surface differing from male as in *T. regularis*, Sl.

Length, 16½; breadth, 11 mm.

Its narrower form, greater convexity, and the less conical granules of the elytra, serve to distinguish it from *T. regularis;* while its smaller size, and the less parallel and more convex form of its elytra readily separate it from *T. æqualis*, Sl. From *T. solidus*, Sl., its smaller size, narrower and more convex form, and the stronger and more regular granulation of the interstices of the elytra, together with the fewer scales of the dorsal surface, help to distinguish it.

Habitat.—Everard Range, &c., May-June.

Talaurinus æqualis, *n. sp.*

Oblong, subparallel, elytra flattened on disc; prothorax granulate; elytra striate, the interstices granulate. Black, the granules shining; spaces between the granules on prothorax without scales, on elytra sparsely filled with fine cinereous scales, these thickly-set and forming a stripe along anterior part of lateral margin; under-surface with cinerous scales down middle of ventral segments.

Rostrum short, excavate, without internal ridges, transversely impressed at base between external ridges, these setigero-punctate. Head broad, convex; front with short decumbent setæ; occiput with fuscous scales along margin of prothorax.

Male.—Prothorax a little broader than long (4 x 5½ mm.), lightly convex transversely, lightly rounded on sides, widest before the middle; disc hardly at all convex longitudinally; anterior margin strongly sinuate, middle rounded and projecting

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very lightly above head; base truncate; granules closely placed, round, unequal, separate, unisetigerous, extending on sides to near coxæ. Elytra oval (11½ x 7½ mm.), subparallel (lighted rounded) on sides, widest a little behind middle, very little narrowed to shoulders, strongly declivous behind; disc depressed hardly convex transversely, and not at all so longitudinally; base lightly emarginate; the shoulders advanced in a strong subtruncate tuberculiform projection; apex wide, without sinuosity or projections near suture; dorsal striæ formed of numerous depressions with a small setigerous granule between each; dorsal interstices closely-set with small setigerous tubercles becoming stronger and more conical towards apex; tubercles of second and fourth insterstices stronger and wider apart, those of third more confused. Ventral segments with lateral impressions almost obsolete; first segment flat, hardly the least hollowed-out between posterior coxæ; second flat; apical segment a little longer than two preceding ones together, deeply excavate, the excavation extending for full length of segment, parallel sided, evenly and regularly rounded at bottom; the posterior lateral tufts of reddish hair weakly developed. Legs light; femora cylindrical, anterior without a ridge on lower side.

Length, 18; breadth, 7½ mm.

Female.—Only differing from the male by having the elytra flatter with less marked sculpture. The apical ventral segment with a large round foveiform excavation in the middle (prothorax, 5 x 5¾ mm.; elytra, 12 x 8 mm.).

Length, 19; breadth, 8 mm.

This species differs from *T. regularis*, Sl., by its more elongate and depressed form, and by the elytra in both sexes being far less dilatate on the sides. The granules on the interstices of the elytra are not tuberculiform, except towards the apex, and then far less strongly so than in *T. regularis*. From *T. Helmsi*, Sl., its much flatter dorsal surface, larger size, and less regularly sculptured elytra readily distinguish it. Compared with *T. solidus*, Sl., it is of lighter and more parallel form, with flatter and more regularly sculptured elytra, and with hardly any scales on the dorsal surface.

Talaurinus crassiceps, *n. sp.*

Male.—Elongate, narrow; head (with rostrum) short and thick; prothorax short, thickly granulate; elytra foveo-striate, the interstices finely granulate; legs very long and light. Black, cavities of prothorax and elytra thickly-set with cinerous scales; sides of jaws, head, prothorax, and elytra, together with the metasternum and sides of ventral segments, sprinkled with white scales; femora covered with white scales, becoming very thick

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towards apex; tibiæ (excepting lower side) and upper side of tarsi thickly-set with whitish scales; legs and ventral segments setigerous, the setæ black, very closely placed, but not forming a "vitta," in middle of ventral segments.

Rostrum short, thick (as thick in front as the head), scarcely emarginate and without a triangular lamina at apex, almost flat, only excavate towards apex, lightly tri-impressed at base, with a short linear median impression and a wide shallow one on each side; external ridges short, not elevated, continuous with front; sides of rostrum roundly convex below antennæ; gular emargination without a median projection. Head thick, convex, whole upper-surface and external ridges of rostrum rather thickly setigerous; occiput thickly-set with pilose scales. Prothorax transverse ($3\frac{1}{3}$ x $4\frac{3}{4}$ mm.), not dilatate on sides, widest rather before the middle, very little narrowed in front, decidedly and rather roundly narrowed behind, wider across apex than across base; disc transversely subconvex, not longitudinally convex; anterior margin strongly sinuate, middle rounded, but not projecting above head; ocular lobes very prominent; base truncate; granules strong, thickly set, unisetigerous, obsolete on sides near coxæ. Elytra oval ($9\frac{1}{2}$ x $5\frac{1}{2}$ mm), wider than prothorax, widest about middle, evenly rounded on sides, narrowed to base, declivous behind; disc depressed, convex towards sides, hardly so longitudinally; base very lightly emarginate; shoulders marked by a strong but not very prominent tubercle; apex evenly rounded, without sinuosity or projections near suture; striæ formed of close shallow foveæ; interstices narrow, not elevated, closely-set with small setigerous granules. Apical-ventral segment not as long as two preceding ones together, not excavate. Anterior femora cylindrical, very little thickened before the middle; lower side without a ridge.

Length, 15; breadth, $5\frac{1}{2}$ mm.

Habitat.—Barrow Range.

I know of no species allied to this; its very short thick rostrum, hardly the least excavate and with weak scrobes, separates it from all the species of *Talaurinus* known to me. The late Sir William Macleay would probably have placed it in his "granulate" group.

Talaurinus obscurus, *n. sp.*

Female.—Oblong, robust; head and rostrum large, setigero-punctate; prothorax subcylindrical, coarsely granulate; elytra substriate, the interstices roughly granulate, the granulations setigerous, a few fine setæ in the striæ. Black, shining; forehead with a light vitta of griseous scales down the middle, bifurcating and the scales becoming whiter on the rostrum. Specimen

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before me without other scales, excepting a ventral median vitta of short yellowish-brown scales reaching from middle of first segment to apex; this vitta narrow and very weak on first two segments, wider and continuous on last three.

Rostrum broad, thick, as wide across apex as head, lightly excavate; middle part broad, not raised into a ridge; a broad horseshoe-like impression at base, subfoveate and extending obliquely forward on each side; external ridges convex, continuous with forehead. Head broad; front depressed and lightly concave in middle behind rostrum. Prothorax a little broader than long (5¾ x 6½ mm.), subcylindrical, dilatate on sides, broadest before the middle, as broad across apex as across base, not convex longitudinally; disc depressed; anterior margin sinuate, truncate above head; base truncate; granules large, unequal, flattened, unisetigerous; sides lightly rugulose near coxæ; a narrow space along anterior margin rather roughly setigero-punctate. Elytra heavy, suboval (15 x 8½ mm.), widest about middle, strongly rounded on sides, decidedly narrowed to base and apex, transversely and longitudinally convex; middle of disc depressed; base lightly emarginate; shoulders a little advanced in a strong obtuse prominence; apex with a strong triangular projection at end of second interstice of each elytron, the emarginations between these projections broad, shallow, not triangular; sculpture formed of elevations and depressions: the elevations rather regular, forming subgranulate interstices, not prominent on anterior two-thirds of elytra: the depressions irregular; posterior declivity with more regular sculpture than disc, the interstice having regular tuberculiform granules; sculpture of sides irregular, with deep transverse rugæ. Ventral segments, excepting first, impressed on sides: the impressions of third and fourth confluent, and together forming a deep fovea not extending to posterior margin of fourth; apical segment as long as two preceding ones together, not excavate towards apex.

Length, 23½; breadth, 8½ mm.

Habitat.—Westward to Everard Range. May-June.

This species seems more allied to *T. convexus*, Sl., than to *T. insignis*, Sl., or *T. noctis*, Sl. The differences in the rostrum, forehead, sculpture of the elytra, and the much weaker ocular lobes, &c., preclude me from thinking there can be any possibility of its being the female of *T. convexus*.

Talaurinus noctis, *n. sp.*

Female.—Oblong, robust; head broad, smooth; prothorax granulate; elytra longitudinally very convex, subfoveo-striate (the sculpture intricate), legs light. Black, shining; prothorax and elytra without scales, except some whitish ones near margin

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of elytra; under-surface with a few scattered black setæ, a patch of yellowish scales on middle of anterior part of three last ventral segments.

Rostrum broad, short, not concave; the middle rather flat; external ridges diverging in front, flattened; a short deep oblique impression on each side of base, lightly connected behind, and forming a horseshoe-shaped impression. Head broad, thick, convex; front a little flattened behind rostrum. Antennæ slender; the scape very little thickened to apex. Prothorax broader than long (5½ x 6½ mm.), dilatate on sides, widest before the middle, as wide across apex as across base, lightly convex transversely, not convex longitudinally; disc depressed: anterior margin strongly sinuate: middle not projecting above head; base truncate; granules large, unequal, rather flat, separate, unisetigerous (the setæ black and small); sides granulate, and rough to the coxæ; a narrow space along anterior margin free from granules, setigero-punctate, and declivous. Elytra oval (14 x 5¾ mm.), widest about middle, transversely and longitudinally convex; disc not flattened; base hardly emarginate; shoulders advanced in a strong, obtusely conical projection; apex without sinuosity or projections near suture; sculpture formed of subfoveiform depressions and irregular transverse wrinkles separated by intervals, these depressions and intervals arranged in longitudinal lines, and forming striæ and interstices; the sculpture more regular behind and on sides; striæ deep, uneven, the course of two next suture interrupted and confused, three next more even; first three interstices indeterminate and commingled, fourth hardly separated from them, fifth and sixth consisting of closely-set regular elevations; the surface of the elytra sparsely sprinkled with fine black setæ. Three last ventral segments wrinkled at the sides; apical segment not as long as two preceding ones together, a deep narrow fovea at apex.

Length, 22; breadth, 7¾ mm.

Habitat.—

This species differs conspicuously from *T. obscurus*, Sl., female, in having the elytra very convex longitudinally, and without projections or sinuosity at apex, &c., &c. It may be possible that *T. noctis* is the female of *T. insignis*, Sl., but I do not think there is any reasonable probability of such proving to be the case; however, until both sexes of this or some closely allied Amycterid are known, it is impossible to speak with certainty of the sexual differences in this group of *Talaurinus*. The differences from the male of *T. conversus*, Sl., are too decided for there to be any possibility of its being the female of that species.

Talaurinus insignis, *n. sp.*

Male.—Elongate, subparallel; prothorax very dilatate on sides, granulate; elytra foveo-striate; legs long; antennæ slender.

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Black, shining; a few greyish scales in some of the foveæ of the elytra, and a discontinuous stripe of grey scales along their lateral margins. Ventral segments longitudinally impressed on each side, and having a median vitta of thick, bristly, black hair.

Rostrum short, broad, lightly excavate, without internal ridges; the middle a little raised, smooth, and longitudinally convex; a short deep fovea extending obliquely forward on each side of base, these foveæ connected behind by a transverse impression; external ridges setigero-punctate, not divided from forehead, prominent, diverging a little in front of antennæ. Head convex, setigero-punctate between the eyes; front lightly excavate, and strongly declivous to middle of rostrum.

Prothorax a little broader than long (6 x 6½ mm.), strongly dilatate on sides, widest before the middle, about as wide across apex as across base, lightly convex transversely, a little so longitudinally; disc flattened; anterior margin strongly sinuate, middle lightly advanced, but not produced over head; ocular lobes prominent; base truncate; granules large, unequal, flattened, more prominent near sides, not extending to near coxæ; the sides rugulose and setigerous near coxæ; a narrow declivous space along anterior margin free from granules and setigerous. Elytra long, narrow (14 x 7 mm.), depressed on disc, lightly declivous behind; base broadly and lightly emarginate; the shoulders projecting forward in a thick rounded tubercle; apex rounded, the edges of suture becoming very lightly dehiscent at apex, and ending in small blunt prominences; dorsal interstices subcostate, very slightly raised, forming broken discontinuous ridges, becoming rather tuberculate on posterior declivity, third most prominent and reaching almost to apex; the spaces between the interstices of dorsal surface foveate; the foveæ irregular, often confluent, and crossing the interstices; the sculpture of the sides more regular, formed of alternate transverse undulate ridges and depressions so disposed as to make regular longitudinal striæ with subgranulate interstices; the suture in a shallow longitudinal channel. Ventral segments longitudinally impressed on each side of median vitta, the impressions continuous on first and second segments, interrupted on third, extending across last two, and forming a deep oblique fovea on last; apical segment not as long as two preceding ones together. Legs long; anterior femora dilatate in middle, a longitudinal linear cicatrix on lower side of apical half;* posterior tarsi long, narrow; ungues long.

* A more or less prominent longitudinal ridge is found in the middle of the apical part of the femora in many species of *Talaurinus* and *Sclerorhinus*. Though apparently overlooked by former writers, it will probably be found of great use in grouping the species of these genera. It is essentially a characteristic of the male.

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Length, 23 ; breadth, 7 mm.

Habitat.—

I cannot compare this species with any previously described species. From *T. convexus*, Sl., its more elongate form and the flattened elytra are sufficient to distinguish it at a glance. *T. obscurus*, Sl., and *T. noctis*, Sl., are founded on female specimens, and comparisons between different species of *Amycteridæ*, not of the same sex, are apt only to mislead.

Talaurinus convexus, *n. sp.*

This species from the McDonnell Ranges in Central Australia, though not one of the Amycterides of the Elder Exploring Expedition, may be very appropriately described here, as being closely allied to the preceding three species and adding another to the isolated group they form in the genus *Talaurinus*. It is represented in my collection by a single example.

Male.—Oblong-elliptical, convex ; prothorax coarsely granulate on disc ; elytra longitudinally convex, foveo-striate. Black ; a faint median vitta of griseous scales on forehead, bifurcating on rostrum ; a few griseous scales near eyes ; prothorax without scales, excepting a small patch of griseous scales in middle of vertical part of each side, and another similar patch of scales near each basal angle ; disc of elytra almost free from scales, a few in some of the foveæ, the scales more plentiful on posterior declivity, a discontinuous stripe of greyish scales along lateral margins. Ventral segments with a narrow vitta of thick, bristly, fuscous hair.

Rostrum short, excavate, without internal ridges ; the middle smooth, not raised ; a deep, broad, transverse impression at base ; external ridges not divided from forehead, lightly convex, diverging slightly in front. Head not large ; front depressed in middle, and lightly excavate behind rostrum. Prothorax broader than long ($5\frac{3}{4}$ x $6\frac{1}{2}$ mm.), dilatate on sides, broadest before the middle, wider across base than across apex, transversely convex, hardly so longitudinally, but declivous in middle to anterior and posterior margins ; anterior margin strongly sinuate, middle lightly advanced and rounded above head ; base truncate ; granules unequal, much larger on disc than on sides, separate, unisetigerous, a few smaller ones extending to near coxæ ; a narrow longitudinal median line dividing the granules on posterior-half ; a light transverse impression across anterior part, more clearly defined and nearer margin behind each post-ocular sinuation ; an obsolete longitudinal impression on each side, becoming well marked near each basal angle. Elytra oval ($14\frac{1}{2}$ x $7\frac{1}{2}$ mm.), lightly rounded on sides, widest about middle, transversely and longitudinally convex ; disc not flattened ; base

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lightly emarginate; shoulders advanced in a strong obtuse tuberculiform projection; apex rounded, without sinuosity or projections near suture; sculpture regular, formed of foveate striæ and subgranulate interstices; granulations of interstices conical on posterior declivity, those of third interstice most prominent and almost reaching to apex; sculpture of sides weak after sixth *(infra-humeral)* interstice. Ventral segments longitudinally impressed on each side of median vitta as in *T. insignis;* apical segment not as long as two preceding ones together. Legs of ordinary proportions; anterior femora shorter, and less dilatate in middle than in *T. insignis;* cicatrix of apical part of lower side short and weak.

Length, 22½; breadth, 7½ mm.

Sclerorhinus Elderi, *n. sp.*

Oblong, convex; prothorax granulate, striate-tuberculate. Black, head and dorsal parts of prothorax and elytra thinly covered with scales of brownish-grey colour (these scales much thicker on elytra): the scales on lower parts of sides of prothorax and elytra cinereous, and placed in cavities, those of elytra forming an interrupted marginal stripe; tubercles, granules, and elevations shining; a median vitta on under-surface, this vitta in male continuous from mesosternum to apex, narrow, formed of blackish-brown velvety pile; in female discontinuous, formed (on basal segment of abdomen only) of short griseous hair-like scales.

Rostrum short, wide, hardly narrower than head, lightly emarginate in front, lightly impressed at each side of base of central ridge, which is broad, smooth, very slightly raised, not extending to forehead; external ridges hardly diverging in front, finely setigero-punctate. Head rather flattened on sides; occiput convex; front a little flattened and gently declivous to middle of rostrum.

Male.—Prothorax not much wider than long (6 x 6¾ mm.), dilatate on sides, broadest before the middle, shortly and roundly narrowed in front, gently narrowed behind; anterior margin sinuate, truncate between ocular lobes; base truncate; granules large, unisetigerous; sides near coxæ rugulose, not granulate Elytra oval, narrow (14½ x 7½ mm.), wider than prothorax, widest rather behind middle, a little narrowed to base; sides lightly rounded; base truncate; apex widely rounded, without sinuosity or projections near suture; dorsal surface not flattened, convex transversely and longitudinally; five rows of strong closely-placed tubercles on each elytron, the fourth (the humeral one) beginning at the shoulder in a strong subconical projecting tubercle; the tubercles rather flatter on dorsal surface, rounder

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and conical on posterior declivity; a row of granules (stronger and closer near the base) on each side of the suture (the first and third rows of tubercles hardly extend on the posterior declivity, the second extends almost to the apex, the fourth and fifth hardly so far). Ventral segments strongly divided, impressed, slightly rugulose, and almost glabrous on each side of median vitta; apical segment not as long as two preceding ones together, the impression on each side of the median vitta deepest towards the front, not extending in full depth to either anterior or posterior margin. Legs sparsely setigerous; femora cylindrical; anterior thickened in middle, lower side with a narrow cicatrix-like ridge on apical half; anterior tibiæ sinuate and setigerous on lower side, the apex bent inwards in a single strong triangular projection.

Length, 22½; breadth, 7½.

Habitat.—Everard Range.

Female.—Larger and proportionately wider than male; prothorax (6½ x 7½ mm.) wider across base, less dilatate on sides; elytra (15½ x 9 mm.) more rounded on sides, with a small triangular sutural notch at apex; anterior femora much less thickened in the middle, the cicatrix of lower side obsolete; three last ventral segments with light rugulose impressions on each side (these impressions long, narrow, and oblique on apical segment); apical ventral segment with a narrow parallel-sided median excavation at apex.

Length, 24; breadth, 9 mm.

This species must be allied to *S. laticollis*, Macl. (the type of which from Sir William Macleay's description seems to be the male), the most apparent differences between it and that species seem—the elytra broader than the prothorax in the male, and the upper-surface not free from scales in *S. Elderi*.

Sclerorhinus occidentalis, *n. sp.*

Robust, elliptical; prothorax dilatate on sides, granulate; elytra with rows of red tuberculiform granules. Black, elytra very thickly covered with short cinereous-brown scales; a narrow median vitta of thick tawny hair extending on under-surface from mesosternum to apex.

Rostrum short, about as wide as head, considerably dilatate on sides below antennæ; external ridges parallel, convex in profile; central ridge broad, prominent, hardly divided from forehead. Head with front flattened and lightly impressed longitudinally behind the sulci of the rostrum. Head and rostrum with two vittæ of yellowish scales, sides of head with yellowish scales.

Male.—Prothorax broader than long (7 x 8 mm.), very dilatate on sides, widest before the middle, transversely and longitudinally convex; disc greatly depressed; anterior margin strongly sinuate,

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the middle projecting lightly over the head; base truncate; an elongate triangular impression in front of each basal angle, a less distinct impression near each anterior angle (these impressions not meeting); median line well-marked only on disc; granules closely-set, separate, unequal, depressed, unisetigerous, obsolete on sides near coxæ. Elytra heavy, not wider than prothorax (15·5 x 8 mm.), rounded on sides, widest rather behind the middle, transversely convex; disc lightly convex longitudinally; posterior declivity rather strongly declivous; base broad, roundly emarginate; shoulder projecting in a strong obtuse prominence; apex widely rounded, without sinuosity or projection near suture, the edge very thick and prominent on each side; six rows of tubercles on each elytron: first very short, oblique, only noticeable near scutellum: second, fourth, and sixth rows not extending to base or apex: second consisting of eleven or twelve separately, but not widely-placed, small round tubercles: fourth of eight similar tubercles, not extending on to posterior declivity: sixth of much more closely placed stronger and more conical tubercles (sixteen or seventeen), extending nearer to both base and apex than those of second and fourth rows: third and fifth (humeral row) consisting of closely-placed tubercles (twenty-one to twenty-six in a row) extending from base to near apex; the tubercles more prominent behind, conical on posterior declivity; a row of fine black setæ between each row of tubercles. Ventral segments rather strongly impressed on each side of median vitta; a strong, narrow, oblique impression between first and second segments; apical segment not as long as two preceding ones together, and having the impression on each side of the median vitta deep, narrow, and parallel. Legs moderate; femora subgranulate, cylindrical; anterior dilatate in middle, arcuate on upper-side, lower-side with a long, narrow, straight, cicatrix-like ridge on anterior two-thirds; tibiæ rather strong; four posterior ones with a few short spines on inner side; anterior with two or three widely-placed dentiform tubercles on lower-side, apex bent broadly inwards, the anterior part of the projection prominent and acute.

Length, 24; breadth, 8 mm.

Female.—Differs from the male in the much less dilatate and less convex prothorax (7·25 x 8·25), the granules larger and more prominent, the lateral impression of the disc continuous from base to apex, the spaces between the tubercles filled with scales. The elytra broader (16·25 x 10 mm.), more rounded on the sides, posterior declivity a little more abrupt, the apical margin with a small triangular sutural emargination; the tubercles larger and less prominent, the second and fourth rows with fewer tubercles (only four widely placed ones in the fourth)

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The median vitta of the under-surface much weaker, formed of yellowish scales and short hairs. Only the three apical ventral segments laterally impressed, the impressions almost continuous and diverging a little in front, the apical segment rugulose in middle and with a narrow transverse impression near extremity between the lateral impressions. Anterior femora without a ridge on lower side; the inturned apical projection of anterior tibiæ larger and more conspicuous.

Length, 25; breadth, 8·25 mm.

Habitat—Upper Murchison.

This species seems most closely allied to *S. molestus*, Pasc., among previously described species. My collection contains a female specimen from some part of South Australia, which is evidently *S. molestus*, Pasc.; compared with it, *S. occidentalis* is much less convex on both prothorax and elytra, has the tubercles of the elytra red (not black), and much less conical and strong on the apical half. It may also come near *S. laticollis*, Macl., but, I think, from there being nothing to the contrary in the description of *S. laticollis*, the tubercles must be placed in that species equally in all the rows, as in *S. Elderi*, Sl.; besides the present species seems too thickly covered with scales for it to be *S. laticollis*, of which Sir William Macleay says:—"The whole insect is of an almost glossy black, and free from scales."

The male is readily distinguished from the male of *S. angustipennis*, Sl., by its wide rostrum with the external ridges not convex in profile; the more convex prothorax with much larger but less prominent granules, the sides of the prothorax apparently more dilatate, with the middle projecting more sharply out from the lateral parts above the coxæ; the broader elytra more strongly rounded on the sides, the shoulders forming a large blunt projection, not a tubercle, the apex widely rounded with the edge thick and prominent on each side, the tubercles of the second and fourth rows, &c., more numerous and more closely set.

Among the Amycterides of the Elder Expedition there was only a single female of this species. I am indebted to the Rev. Thomas Blackburn for the loan of the male specimen described above, which is in his collection as coming from West Australia.

Sclerorhinus angustipennis, *n. sp.*

Male.—Elongate, convex; prothorax dilatate, finely granulate: elytra narrow, with rows of red tuberculiform granules. Piceous-black; head, prothorax, and elytra covered with ferruginous scales, these very close all over elytra (except where rubbed-off sides by femora), giving them a rusty appearance; a narrow median vitta of thick tawny hair extending on under-surface from mesosternum to apex.

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Rostrum short, a little narrower than head, very little widened on sides below antennæ; external ridges almost parallel; central ridge short, narrow, prominent, not extending to forehead. Head convex, not flattened on sides; front a little flattened and very lightly declivous to middle of rostrum. Prothorax a little broader than long (7 x 7·5 mm.), very dilatate on sides, widest before middle, transversely and longitudinally convex; middle of disc rather flat; anterior margin sinuate, the middle projecting slightly over the head; base truncate; an obsolete transverse impression across the anterior part; longitudinal impressions of sides obsolete; median line very fine; granules closely-set, separate, small, round, unequal, unisetigerous, obsolete on sides near coxæ. Elytra long, narrow, not wider than prothorax (14·5 x 7·5 mm.), very lightly rounded on sides, widest abou middle, tapering to apex, transversely convex; disc very lightly longitudinally convex; posterior declivity gently declivous; base lightly and roundly emarginate; a strong blunt tubercle at shoulders; apex rounded, without sinuosity or projections near suture; six rows of tubercles on each elytron: first short, oblique, only present near scutellum: second and fourth not extending to base or to posterior declivity: second consisting of five widely-placed granuliform tubercles: fourth of three similar ones: third and fifth (humeral row) consisting of closely-placed tubercles (twenty to twenty-five in a row) extending from base to near apex and becoming wider apart and more conical on posterior declivity; tubercles of sixth stronger than those of other rows, and not extending to base or apex; a row of very fine granules bearing short decumbent setæ between each row of tubercles; ventral segments as in *S. occidentalis*, Sl. (male). Legs long; femora subgranulate, cylindrical; anterior very dilatate in middle, very arcuate on upper side, lower sides with a long, narrow, straight, cicatrix-like ridge on anterior two-thirds; tibiæ slender, four posterior ones with a few short spines on inner side: anterior with two or three widely-placed dentiform tubercles on lower side, and with apex bent inwards in a broad bifid projection.

Length, 22·5; breadth, 7·5 mm.

Habitat.—Fraser Range.

A single specimen. It is very closely allied to *S. occidentalis*, Sl. For the same reasons as given under that species I have not thought it possible for it to be *S. laticollis*, Macl.

Molochtus tibialis, *n. sp.*

Male.—Oblong-elliptical, disc of prothorax and elytra depressed; head and rostrum narrow; prothorax subquadrate, closely granulate; elytra subtriate, the interstices irregular. Black, opaque, without scales.

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Rostrum short, about same width as head, deeply excavate, divided from front by a linear impression; external ridges short, prominent, strongly punctate, very lightly divergent in front, connected behind by a curved ridge. Head small, much narrower than prothorax, convex behind; front smooth, sparsely and finely punctulate; anterior margin very lightly emarginate; each side elevated into a short convex ridge in a line with, and just behind, the external ridges of rostrum (these ridges raised above the plane of the external ridges). Prothorax subquadrate (5·5 x 5·75 mm.), widest about middle, truncate in front and behind, flat on disc, very declivous behind, very lightly declivous from middle of anterior part of disc to anterior transverse impression; sides very lightly rounded in middle, gently but decidedly narrowed in front, shortly narrowed behind; a narrow linear transverse impression a little behind anterior margin; two small prominent conical tubercles on each side, one placed where the sides begin to narrow in front, the other (larger and more prominent) in a corresponding position behind: another tubercle, about equal in size to the latter, placed on each side above the basal declivity—the space between these wide and concave; granules strong, small, well-defined, very closely set, rather diamond-shaped, punctured at apex, but not setigerous. Elytra a little wider than prothorax (12 x 7 mm.), subparallel, very lightly rounded on sides, widest about middle; disc flattened, posterior declivity abrupt; base truncate; apex with a very short triangular projection on each side of suture, the emargination between these light triangular; a strong conical tubercle at each shoulder, and another similar, but much smaller, on base at half the width of each elytron; sculpture rather regular; the striæ sub-foveate, seven granulate striæ on each elytron, those on disc with the granulations, especially towards the suture, confluent and divided by wavy transverse depressions; others stronger, more regularly granulate; the granules becoming more prominent and conical behind; numerous shallow punctures without setæ dispersed over elytra. Metasternum flat, thickly covered with minute granules. Ventral segments strongly divided, not setigerous; first and anterior-half of second minutely granulate; last three and posterior part of second coarsely punctate; apical segment as long as two preceding ones together, lightly impressed towards apex; second segment lightly and widely hollowed between the coxæ. Legs long; anterior tibiæ with external edge strongly arcuate near apex, inner side with a deep short emargination before apex, apex produced inwards in a broad strong projection.

Length, 18·5; breadth, 7 mm.

Habitat.—Fraser Range.

Female, compared with male, larger, broader, and flatter. Pro-

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thorax (6 x 6·5 mm.) flatter, more strongly granulate; three strong lateral tubercles on each side, two of these as in male, the third smaller and placed a little in front of the one where the sides begin to narrow in front. (There are faint indications of this tubercle in the male.) Elytra more robust, greatly wider than prothorax (16 x 9·5 mm.), more evenly and strongly sculptured; the triangular notch at apex much deeper, the projections on each side of it more prominent; second ventral segment not hollowed between coxæ; apical segment with edge a little upturned round apex. Legs shorter; anterior tibiæ less arcuate on external edge, and without the broad inward projection and ante-apical notch of lower side.

Length, 25; breadth, 9·5 mm.

When in Sydney I was able, through the kindness of Mr. Masters, to compare *M. tibialis* with a specimen (evidently a female) of *M. gagates*, Pasc., received by him from Mr. Pascoe. I would note the following differences:—*M. tibialis* has the rostrum more deeply excavate, with longer and more prominent external ridges, the front with a strong prominence on each side behind the external ridges of the rostrum (in *M. gagates* these prominences are obsolete); the prothorax flatter, with the large tubercles more strongly developed, excepting the two on the base, which in *M. gagates* equal those near the basal angles; the granules more prominent, more numerous, and more clearly defined; the elytra flatter, and somewhat differently sculptured, the granules being in rows, separated by wavy interrupted striæ. (In *M. gagates* the sculpture is rougher and more confused, with the transverse impressions deeper.

This species seems to have an extensive range, the male is labelled "Fraser Range, October," the female "May-June" (westward to Everard Range).

Acantholophus granulatus, *n. sp.*

Of elongate elliptical form; elytra much wider than prothorax; dorsal surface of prothorax flat, tuberculate, with lateral margins dentate; elytra striate, the interstices closely granulate. Black, with cinereous scales; the scales whiter, and sparsely placed on sides of rostrum, prothorax, and elytra, very thinly scattered among the cavities on disc of prothorax, thicker on middle of posterior part, set in thick patches on the dorsal surface and apical declivity of elytra, giving the elytra a mottled ashen appearance.

Rostrum short, about as wide as head, very deeply excavate; external ridges rugulose, setigerous, very much elevated, as high behind as in front, cut obliquely to apex of scrobe in front, separated from frontal crest by an oblique gap; a transverse im-

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pression at base, bifurcating at sides, the anterior branch forming the gap between the external ridges and frontal crests, the posterior branch extending on to these latter. Head flat and rugulose in front; frontal crests narrow, very elevated, obliquely truncate at summit. Prothorax almost as long as broad (4 x 4·25 mm.), truncate in front and behind; dorsal surface flat, strongly and very closely tuberculate; median line lightly marked; a strongly marked narrow transverse impression near anterior margin, and another near base; lateral margins produced and quadridentate between these impressions (third projecting tubercle of side very small); vertical part of sides convex, lightly rugulose; a dentiform tubercle on each side of the disc in front of anterior transverse line, and a strong conical tubercle on each side of median line near base. Elytra oval (10 x 6·25 mm.), evenly rounded on sides, perpendicularly declivous behind; base truncate between shoulders, gently but greatly declivous to peduncle; apex widely rounded; the elytra lightly dehiscent at suture, and each ending in a short triangular projection; disc depressed, but slightly convex transversely and longitudinally; striæ continuous, a little uneven; first seven interstices with a row of small very closely-set regular setigerous granules (these rows having a tendency to become double on parts of first three interstices); the granules of fifth and sixth interstices near the base, and of all the insterstices on posterior part, becoming tuberculiform; a rather strong tubercle at each shoulder at beginning of fifth interstice. Tarsi broad, short.

Length, 16·5; breadth, 6·25 mm.

Habitat.—Barrow Range, Central Australia (August, 1891).

There is only a single example of this well-marked species: unfortunately the abdomen is broken, so that I have been unable to ascertain the sex, though I believe it to be the male. I know of no species that is closely allied to this; in the shape of both rostrum and forehead, it shows a relationship to the genus *Molochtus*, which its author, Mr. Pascoe, thought more allied to *Talaurinus*. In this I do not agree, for it seems to me the affinities of *Molochtus* are more to *Acantholophus* and *Cubicorhynchus*.

Cubicorhynchus occultus, *n. sp.*

Oblong, convex; prothorax granulate; elytra striate, the interstices granulate; anterior coxæ not contiguous. Black with cinereous scales.

Rostrum short. Head convex behind; front flat, a few faintly marked rugosities towards vertex; frontal crests not prominent, continuous with, but a little more raised than, external ridges of rostrum, truncate behind, conical at apex.

Male.—Prothorax a little broader than long (4 x 4½ mm.),

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truncate in front and behind; strongly and almost vertically declivous to peduncle; sides roundly dilatate, more shortly rounded in front than behind; disc rather depressed, slightly convex transversely and longitudinally; a strongly-impressed line a little behind anterior margin (causing the anterior margin to be completely girdled by a convex *collar*); median line very lightly marked; small separate unisetigerous granules rather thickly placed all over disc, and on sides about half-way to coxæ; space between granulate portion and coxæ smooth. Elytra a little wider than prothorax (8·5 x 5·5 mm.), oval, widest about middle; base rounded with long oblique declivity to peduncle; posterior declivity abrupt; disc rather depressed, lightly convex transversely and longitudinally; seven granulate interstices on each elytron: granules of first interstice weak, of first and second not extending to the posterior declivity, of other interstices becoming stronger towards apex, those of fifth tuberculiform (about three) at commencement of posterior declivity: granules closely and regularly placed, separate not setigerous; brownish cinereous scales rather thinly dispersed all over the elytra. Under-surface thinly sprinkled with pale setæ and scales; first ventral segment concave; second lightly and broadly impressed in middle; apical segment with a very light median impression towards apex. Legs long, light, covered (most thickly towards apex of femora and on tibiæ) with gray scales and setæ; anterior femora cylindrical, narrow and bent near base, thickened on apical-half; anterior tibiæ strongly arched, inner edge serrate, the serrations separate and granulate; joints of tarsi squamulose on middle of lower side.

Length, 14; breadth, 5·5 mm.

Female.—Compared with male. General form broader and heavier. Head wider. Prothorax proportionately wider (3·75 x 4·5 mm.); disc more depresssd; sides less dilatate, a conspicuous small conical granule on each side on anterior of *collar;* the posterior declivity shorter and almost vertical to the peduncle. Elytra much wider (9 x 6·25 mm.), more regularly convex; posterior declivity more gently rounded, and less abrupt; the granules of the interstices more regular, and, though becoming stronger backwards, yet none of them tuberculiform, those of third and fifth interstices equally strong behind. Ventral segments not impressed. Anterior femora not bent near base.

Length, 14·5; breadth, 6·25 mm.

Habitat.—Fraser Range (October 1891).

Cubicorhynchus modestus, *n. sp.*

Female.—Oblong, convex; prothorax strongly granulate; elytra striate, the interstices with setigerous granules anterior

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coxæ not contiguous. Black, sparsely sprinkled with brownish scales, the setæ of dorsal surface fulvous.

Rostrum short, flat. Head convex behind; front slightly rugulose, without tubercles; frontal crests prominent, conical. Prothorax broader than long (3 x 3·5 mm.), hardly declivous to peduncle; disc depressed, lightly convex transversely, and very lightly so longitudinally; a transverse impression near anterior margin obsolete on sides; anterior margin with very lightly marked post-ocular sinuations; base truncate, lightly bordered; granules strong, tuberculiform, separate, unisetigerous, more thickly placed on sides of disc than on middle; vertical part of sides granulate rather more than half-way to coxæ, space between granules and coxa smooth. Elytra much wider than prothorax, oval (7·5 x 4·75 mm.), widest about middle, shortly rounded at shoulders; base truncate, declivous to peduncle; posterior declivity abrupt; disc depressed, lightly convex transversely, hardly so longitudinally; seven granulate interstices on each elytron; granules closely and regularly placed, setigerous, those of first and second interstices weak, of third, fourth, and fifth stronger, conical, becoming more prominent towards apex: seventh interstice with only a few granules near shoulder. Under-surface shining, sparingly sprinkled with pale separate hairs. Legs as usual in genus; tibiæ ciliate, with rather long fulvous hairs; tarsi without squamulæ on middle of lower side.

Length, 11; breadth, 4·75 mm.

Habitat.—Barrow Range.

The following species, which I regard as *Cubicorhynchus cichlodes*, Pascoe, I consider it to form the type of a new genus, and as Mr. Pascoe's description is very brief, I now offer a more detailed one. As explaining the apparently greater size of the present example as compared with Mr. Pascoe's figures, it may be remarked that his measurement (length only) is exclusive of the rostrum; excluding the rostrum the example before me is five lines long, or only half a line more than Mr. Pascoe gives.

Notonophes, *n. gen.*

Allied to *Talaurinus*. Form oval, robust. *Rostrum* broad, flat, not divided from head; a light, linear, longitudinal impression in middle; external ridges prolonged backwards to eyes, becoming more prominent behind; scrobes widening backwards and reaching the eyes. *Eyes* transversely oval. A large deep fovea on lower side of throat. *Antennæ* robust; scape about half the length, light, slender at base, gradually thicker to apex; joints of funicle short, thick, cylindrical, setose: two first about equal, a little longer than others: third shorter: fourth, fifth, and sixth still shorter, equal; club about as long as three preceding

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joints together, thick, hardly incrassate. *Prothorax* short, sparingly-set with round, prominent, shining, unisetigerous granules; base closely applied to elytra; anterior margin lightly sinuate. *Elytra* broad, substriate. Three last ventral segments strongly divided; apical segment not longer than two preceding ones together. *Legs* light, short; anterior coxæ contiguous; tarsi short.

Except for the head the species on which this genus is founded has entirely the form of a *Talaurinus*. I see no reason for regarding the single specimen before me as different from *Cubicorhynchus cichlodes*, Pascoe, though the head seems less convex in profile than is shown in the drawing of the head of Mr. Pascoe's species. It has no close affinity to any Amycterid known to me. Mr. Pascoe says *C. cichlodes* res mbles *Talaurinus cricetus*, but he does not attribute that species to any author, nor have I ever seen any reference to such a species exeept this of Mr. Pascoe.

Notonophes cichlodes, *Pasc.*

Cubicorhynchus cichlodes, Pasc., Journ. Linn. Soc., XII., 1873, p. 18.

Oval, robust, convex; prothorax transverse, granulate; elytra convex, substriate, the interstices granulate. Black; a large patch of yellowish scales on each side of rostrum below the scrobes; upper-surface of head, excepting a narrow space in middle and the anterior part of the rostrum, thickly covered with yellowish scales; prothorax thickly covered with brownish-yellow scales, three whitish vittæ on upper-surface (one down middle and one on each side); elytra thickly covered with brownish-yellow scales; an obsolete whitish vitta along suture, another very conspicuous whitish vitta on each side between fourth and fifth rows of granules, a broad white stripe along each lateral margin; under-surface shining, a broad patch of very short yellowish scales on middle of each ventral segment; legs (particularly the tibiæ) covered with white scales.

Rostrum very broad, short, not divided from head on upper-surface, almost vertical on sides; anterior lamina triangular, the apex rounded, a deep channel just behind it and following its course; external ridges diverging a little backwards, not elevated along sides of rostrum, continuous with the frontal crests. Head and rostrum flat; front with a long triangular horn or crest on each side projecting outwards obliquely over the eye in line with the external ridges of rostrum, a light sinuosity where the horn and external ridge meet. Prothorax much broader than long (2·75 x 4 mm.), widest about middle, strongly rounded on sides, strongly convex transversely, not convex longitudinally; anterior margin very lightly sinuate, the middle not projecting over the

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head ; base truncate ; granules of disc widely separated, round prominent, shining, unisetigerous, those near front small, none along course of the vittæ, those of sides closer and more conical. Elytra short (7·5 x 5·5 mm.), much wider than prothorax, strongly rounded on sides, widest rather behind the middle, transversely convex ; disc longitudinally convex, not flattened ; posterior declivity round, abrupt ; base broad, much wider than prothorax, roundly emarginate ; the shoulders not projecting forward ; apex rounded, without sinuosity or projection near suture ; striæ irregular, subfoveate ; interstices closely and rather evenly granulate, the granules small, round, shining, a little confused on disc, each bearing a long decumbent seta.

Length, 12 ; breadth, 5·5 mm.

Habitat.—Murchison River District, W.A.

I have not ascertained the sex of the specimen described, but I think it is the female. A single specimen of another species is in my collection ; in it the external ridges of the rostrum do not run back into horns on the front, the elytra are foveo-striate and without granules ; it seems to be a male ; if so the exual characters are not very different in the sexes in this genus.

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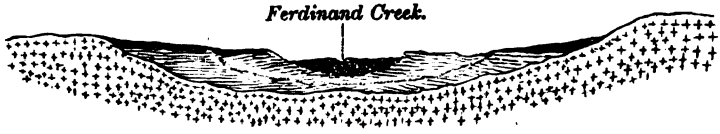
FIG 1.



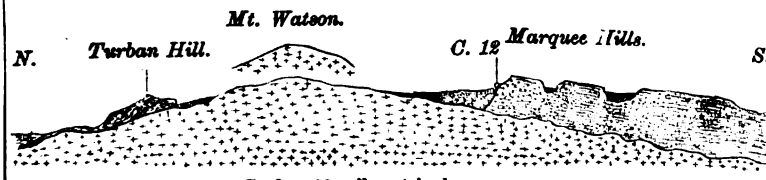
Horizontal Scale : 16 miles, 1 inch.

Recent deposits. *Travertine.* *Granite.*

FIG. 2.

Granite. *Diorite.*

FIG. 3.



Scale : 16 miles, 1 inch.

Recent. *Sandstones and Grits.* *Granites.*

E.C.H

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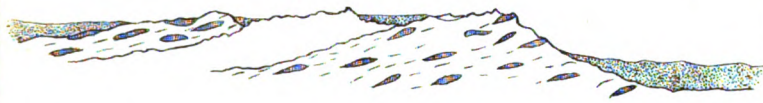
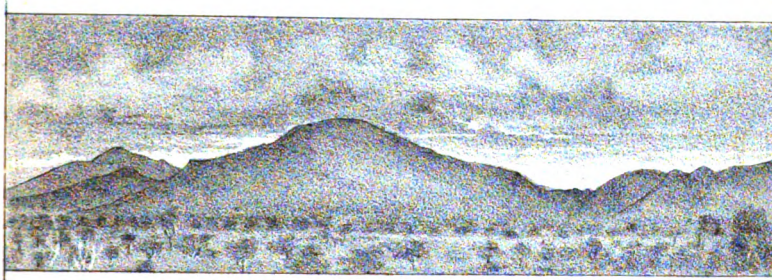
FIG. 4.



Sand. *Travertine with carbonaceous "eyes."* *Chalcedony.*

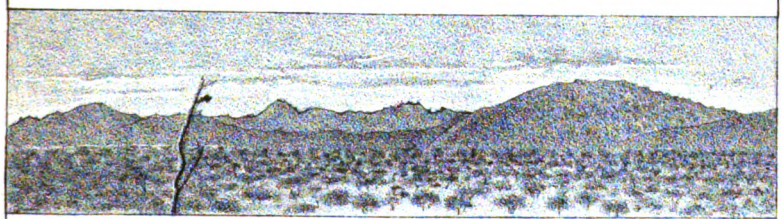
Scale: 24 ft., 1 inch.

FIG. 5.



Mt. Watson (Granite Range).

FIG. 6.



Birksgate Range (Granite).

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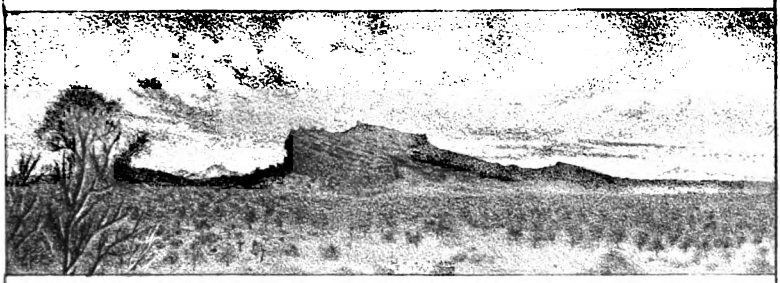
FIG. 7.



Turban Hill (Marquee shape), Granite Range in background.

FIG. 8.

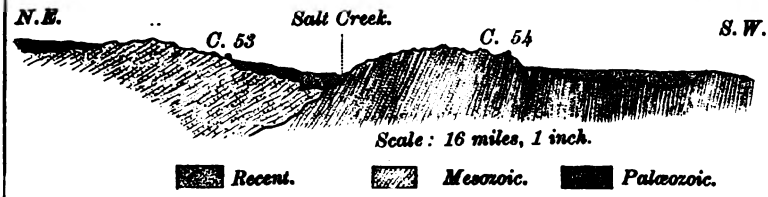


FIG. 9.

Æolian Erosion on sand.

FIG. 10.

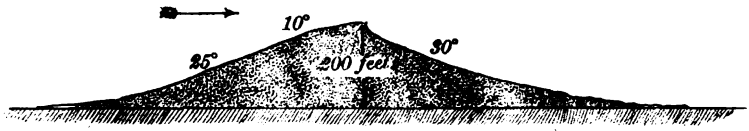


Diagram of Sand-dune.

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FIG. 11.

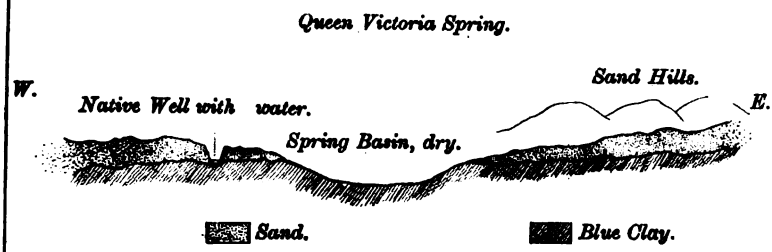


FIG. 12.

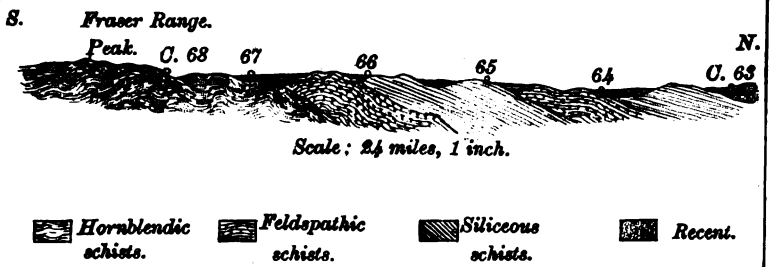
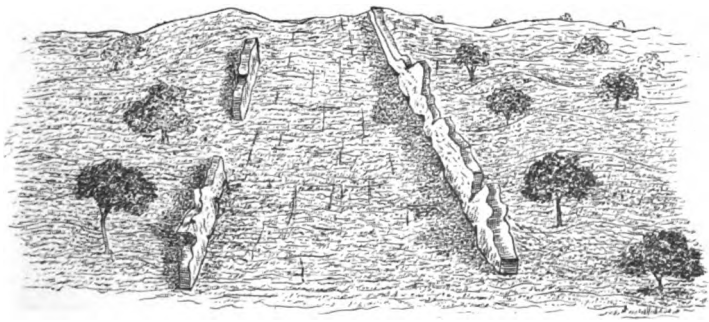


FIG. 13.



Granite Dykes at Fraser Range.

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Hussey & Gillingham Lith.

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TRANSACTIONS

OF THE

ROYAL SOCIETY of SOUTH AUSTRALIA.

VOL. XVI., Part III.

[With Thirty-two Plates.]

EDITED BY PROFESSOR RALPH TATE.

ISSUED JUNE, 1896.

Adelaide:

W. C. RIGBY, 74, KING WILLIAM STREET.

Parcels for transmission to the Royal Society of South Australia, from Europe and America, should be addressed "per W. C. Rigby, care Messrs. Thos. Meadows & Co., 35, Milk Street, Cheapside, London."

This Part concludes Vol. XVI., which was reserved for the Scientific Results of the Elder Exploring Expedition.

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ANTHROPOLOGY.

By RICHARD HELMS.

Explanatory Preface.

The accompanying paper on the aborigines has been written by me in response to repeated requests.

It was not my original intention to publish these observations, which were made merely to gratify my own desire of acquiring some information concerning the habits and customs of the Australian aborigines.

As Naturalist of the Elder Scientific Expedition, such a line of enquiry lay altogether outside my duties, which were so multifarious that my ordinary time would not permit of a systematic study of the subject. On this account my observations are often extremely fragmentary.

The "Extracts from my Diary" are the impressions as they were conveyed to my mind at the time, and were jotted down while fresh in my memory. For this reason I have given them in full, even at the risk of occasional repetitions in the course of the paper.

Regarding some ideas advanced by me in the context, and the conclusions drawn from them, although not pretending to pose as an undisputed authority in this matter, I can only court fair criticism, which I cordially invite.

To my friends, Messrs. C. Fuller and D. N. Saunders, of Sydney, I owe my warmest thanks for the various drawings that accompany this paper, the execution of which it is needless to praise, as the plates speak so graphically for themselves.

Plates 30 to 39 are reproductions from negatives taken by the medical officer of the Expedition, Dr. Elliott, during the trip.

The paper was written in July, 1893, with the intention of publishing it before the end of that year. Unforeseen circumstances, however, delayed its publication, and it is only now, after more than two years, that opportunity has been afforded me of revising the MS. for the press. In this my friend, Mr. F. B. Guthrie, Chemist to the Department of Agriculture, Sydney, has rendered me most valuable assistance, for which I take this opportunity of thanking him.

Sydney, August, 1895.

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Introduction.

It is an acknowledged fact that the native tribes of Australia, like every other indigenous inferior race under similar conditions, are fast disappearing before an advancing civilization. The encroachments made yearly upon their territories, where for many centuries they lived in unfettered freedom, must soon make their results felt throughout the whole continent, because the law of the survival of the fittest will surely, and at no very remote date, assert itself to the detriment of the aborigines. This has already taken place around almost the whole of the Australian coast, and along the leading rivers. It is, therefore, only in the far arid interior that we can hope to find a primitive people. Here some tribes may be found that have not yet come into contact with whites, particularly in the central western district of South Australia, and in the great eastern deserts of Western Australia.

From the nature of the country, mainly on account of its extreme aridness and the consequent lack of an equable production of vegetation, the aborigines inhabiting these vast tracts are likely to remain in undisputed possession of the land long after their brethren now living nearer the coast have ceased to exist. It is quite possible that tribes may yet survive in these remote wilds when the many cities of this continent will be crowded by millions of Australian-born whites, who may scarcely be aware of the existence of Australian blacks. However undisturbed the life of these blacks may be they are not likely to increase, because the unfavorable conditions of the country forbid a large population. Perhaps a few hundred years hence some enthusiastic anthropologist may still have an opportunity of studying in these remote deserts the scattered remnants of an almost extinct race under their natural and unaltered conditions, which may then be observable nowhere else. It is, however, desirable that the study of the natives should not be neglected till they are thus reduced in numbers.

The aborigines of Australia are a paradox amongst the races into which anthropologists have divided the peoples of the earth. Whilst on the one hand they possess habits and customs as well as traits of character that are indicative of a very high culture, on the other hand their general state of savageism places them without dispute in the lowest grade of barbarity. These contradictory aspects, that must force themselves upon every thinking mind who comes in contact with the natives, make them extremely interesting subjects for psychological study. Although in our present matter-of-fact times I have no doubt the question will be asked, What practical result does such a speculative research promise? I hope that there will always be found a

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sufficient number of chosen spirits who appreciate the value of a problem for the difficulty of its solution, and deem nothing mean enough to know, though such knowledge may not always be of a lucrative character.

With these introductory remarks I beg to offer the following short account of the result of a few months' observations to those interested in the subject, with the hope that it will be accepted as a contribution towards completing our knowledge of the aborigines of Australia.

Tribal Characteristics.

Unfortunately, I am only able to generalise upon this interesting subject, because neither cranial nor other anatomical measurements were made by me during the trip, partly owing to the want of time, and partly to being unprovided with the necessary instruments for this purpose.

With the object of distinguishing the various tribes I have divided them according to the geographical names of the districts in which they were encountered. This geographical nomenclature I was obliged to adopt because I could not ascertain the correct tribal names from the natives, through ignorance of their language. Thus, omitting those met at Warrina and Cootinoorinna, I have named the tribes as follows :—

The Everard Range Tribe, S.A. Met near that range, and represented on plates 30 and 31.

The Blyth Range Tribe, S.A. Met first at Camp 12, and later at Camp 15, and past the range they have been named after; represented on plates 32 and 33.

The Barrow Range Tribe, S.A. Met at Camp 33 and near Mount Squires. See plates 22, 23, and 29.

The Victoria Desert Tribe, W.A. Met near Camp 40 and between Camp 43 and 44. See plates 24 and 25.

The Fraser Range Tribe, W.A. Met at the Fraser Range; represented on plates 34-37.

The Hampton Plains Tribe, W.A. Met at the Fraser Range and near Hunt's Well; represented on plates 38 and 39.

The Yunga Tribe, W.A. Met at the Fraser Range.

The Murchison District Tribe, W.A. Met near Annean Station.

Besides these tribes, of which for the most part only small numbers were congregated together, single individuals belonging to different tribes were met with at various times.

Amongst the tribes here enumerated those of the Everard Range and Murchison District were the most robust. Only four adults and one young individual of the first were seen, but from the fact that the country they inhabit is better supplied with the

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means of sustenance than that further west, it is reasonable to suppose that they represented their tribe in average physique, particularly as they were in good condition.

The Blyth Range men were decidedly inferior in condition, and considerably smaller in stature, more especially some of those that visited us at Camp 12. Others met with later on were somewhat taller in stature than the average Blyth Range specimens. Those seen, both at Camp 33 and near Mount Squires, were all over five feet six inches; amongst the latter assembly was one about six feet. The improvement seems to be attributable to the better water, and consequent better food-supply of this region. Their condition was, however, very poor, due, no doubt, in some measure to the protracted dry season, that would prevent them hunting over the full extent of their district, and force them to keep close to the waterholes, where, in consequence of the continual drain upon these contracted limits, the food-supply would soon become scanty.

Of the Victoria Desert tribe, only once a party came under my observation, between Camps 43 and 44. This was a very variably-sized lot, including, however, one fine specimen, but all were much emaciated.

The Blyth Range, Barrow Range, and Victoria Desert tribes inhabit "spinifex country," where subsistence is difficult to maintain, and but for the numerously-occurring *Largochestes hirsutus*, commonly called "Spinifex-Wallaby," and some other small marsupials, it would probably be impossible for them to live in such desolate districts. It can scarcely be wondered at that the majority of them appeared lean and starvation-stricken.

Those inhabiting the surroundings of Victoria Spring* I was not fortunate enough to see, though plenty of indications proved that blacks had congregated at times near to where we camped, but not recently. They were evidently not far away, because fires were seen about 12 to 15 miles from the spot. It would have been interesting to have compared them with the other tribes, because the food supply is much scantier in this region. The *Largochestes* is almost, if not totally, absent here; and some 150 to 200 miles to the north, the eagle-nests, which we had previously noticed daily, disappeared, which at once proved the decrease of these small marsupials.

The stunted physique of the Fraser Range natives must, in my

* No doubt exists in my mind that Victoria Spring was never visited by the Expedition. A clay-pan, the surroundings of which do not at all answer to Giles' description of the natural feature, was mistaken by the leader for Victoria Spring. We were, however, in about the same parallel of latitude, and cannot have been very far away from it.

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opinion, be attributed mainly to the poorer and insufficient food-supply in that district.

As to the Murchison natives on the other hand, the greater abundance of flesh food has probably had its beneficial influence upon them. Kangaroos must be fairly abundant in ordinary seasons in that district, although at the time of our visit they had suffered a great deal through the drought, as became apparent by the number of dead ones found near every well, where these poor brutes had come to drink, and got drowned.

Summarising the foregoing, it may be said that in general the physique of the males is fairly good, but their stature is, with few exceptions, not above the middle height, but frequently below it, and that their appearance is as a rule emaciated. The walking endurance of these blacks is undoubtedly great, but beyond that I do not think that they are very powerful, because they are scarcely ever well-enough fed to develop much muscle, nor do they exercise any other than those of their legs to any extent. The throwing of the waddy and that of the spear require rather skill than great strength.

Owing to the excessive quantities of food they at times devour most of them have a considerably distended abdomen that becomes more conspicuous when contrasted with their generally thin limbs. The few that are working at the stations and get fed regularly contrast very favorably with the wild blacks, so far as their outward appearance goes. It was quite surprising how rapidly those put on flesh who stayed for some time near our camps.

Many have a broad, and in some instances high, forehead, indicating intellectual faculties, which, however, it seems in the most cases are more difficult to cultivate than the appearance of their head would lead one to expect. As a rule, the forehead is slightly receding, and the brows prominently arched and protruding. Their senses of seeing and hearing are very sharp, and are no doubt much improved by the continuous training they get in the pursuit of game, but the other senses do not appear to share these advantages. The cheek-bones are often very prominent, and the face on the whole rather broad. The nose is short and dilated at the nostrils, which is characteristic of most aborigines; but occasionally quite aberrant types are met with. Among the Blyth Range tribe was one who had almost a European cast of features, with a narrow, well-shaped nose; and among the Fraser Range blacks I found one who had a moderately aquiline nose and a decidedly Jewish appearance. The mouth is large with most individuals, and the lips thick; their jaws are very powerfully developed, and their teeth sharp and strong. I have seen them frequently break sticks thicker than a

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man's thumb between their jaws, a method that is preferred by them to breaking it across the knee. Besides the use of their jaws for the purpose of breaking sticks, and that of the teeth for tearing the bark off, the habit of picking up things from the ground with the toes struck me as one of their peculiarities. Almost anything is grasped by them between the big and the other toes, and by bending the leg up at the knee is brought to the hand. Rarely does a blackfellow stoop for anything if he can help it. The hair is dark and somewhat wiry, but mostly wavy, and sometimes curly. When it gets long it becomes occasionally bleached, especially at the tips, and then looks brownish, and often dingy. Its growth is profuse with the males, but less so with the women. The beard is seldom very strong, and often almost absent; and the hairiness of the body only in few individuals strongly developed. As a rule the chest is nearly smooth, but on the arms and legs they are more hirsute. The color of the skin is generally dark-brown, and often dull-looking, but when they are well fed it becomes blacker and shiny. A good deal of the natural color is influenced by the pigments they rub themselves over with, and which to some extent becomes ingrained into the skin.

Prior to reaching the Fraser Range only men and boys were seen by us, with the exception of a small girl at Camp 40. At the Fraser Range, however, there were a number of women. (Pl. 37.) These were nearly all very short, puny, and dreadfully starved-looking specimens, and appeared to be of considerably inferior intellect to the men. Proportionally, their legs and calves are much thinner than those of the other sex, and their walk is shuffling, with the feet invariably turned inward. Although both sexes walk a great deal, their feet are by no means large—in fact, in some instances may be called small; but they are rather dilated across the toes. Their hands are rarely very large; with some of the women I found them really small and well-shaped. The only tall woman seen was a native of Hampton Plains. She was about five feet eight inches. (Pl. 38.) The skin of her abdomen was much crumpled, evidently in consequence of child-bearing. This was the only case in which such an effect was observed; the skin of other women who had borne children was quite smooth.

Amongst all the tribes from the Blyth Range to the Fraser Range inclusive, individuals were met with having pink markings on the abdomen and chest. This was probably owing to some kind of skin disease, although I was told it was the result of some burns received through carrying the firestick too close to the body during windy weather. This is the only indication of a disease I have noticed among them; but I was informed that in

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several places nearer the coast, and where the goldfields of late years have been discovered, venereal diseases are becoming quite prevalent, and, in many cases, have assumed a most virulent character.

A considerable number of deformities are found among the Victoria Desert tribe and near the Fraser Range, which, however, are the consequence of accidents, and in most instances, caused during childhood. Only in one instance did it seem likely that the defect was born with the person. Not a single deformed woman was seen, which makes one surmise that if a female child is severely burnt (which must occur proportionately as often as with a male), it is done away with without mercy, but that the male children receive sufficient attention to recover. Why otherwise were female cripples not also met with?

In disposition and character these blacks are as variable as Europeans. Cheerful or morose, industrious or lazy, willing and disobliging characters may be discovered among them, and even selfishness I have observed, although this perhaps less than any other fault. Most of them are easy-going, and perhaps lazy, according to a white's idea, but on the other hand I have seen them work very hard without being much urged. Patience they possess to such a degree that it may almost be called callousness, but their improvidence characterises them perhaps more than any other peculiarity. They are also given to sulk if offended, and will not be driven to do a thing they object to, as far as my experience goes, but may be coaxed to do many things In this respect they resemble stubborn and spoiled children very much, which to some extent they are from their infancy. As a rule, the children get things pretty well their own way, and are left to look after themselves a good deal, or to follow the mothers when these go out for food. It is not that the children get their way by crying, for that they seemingly rarely do, because I never heard a single sound of the kind, not even from babies. When food is prepared, they either help themselves or get served first, which naturally satisfies them. I never even heard them spoken to in a scolding way. When I had occasion to speak to them sharply—as was the case several times when they became too meddlesome—they sneaked off with a demure face, and generally met me with sulky looks for some time after. When once they are able to run about, the boys are at times much petted by the men, who cheerfully try to amuse them, and caress them.

It speaks, no doubt, greatly in their favor, that during the whole of our trip not a single thing was stolen from the camps; only on one occasion, near the Blyth Range, when I was skinning a small animal, one of the blacks who was watching me,

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secreted my knife under his foot. In the occupied country they often get accused, and probably justly so, of stealing sheep, but if hunger pinches, and temptation is afforded, they can hardly be severely blamed for such thefts, because, after all, through the introduction of sheep, their supply of natural food gets considerably reduced.

A remarkable *lusus naturæ* was observed amongst the women of the Frazer Range, one of whom had six perfect fingers on each hand and the same number of toes on each foot. Not only were these limbs perfectly formed, but the corresponding metacarpal and metatarsal bones were also perfect. (See pl. 36.) Two of her brothers and a sister had, I was told, exactly the same deformity.

Habits and Customs.

The tribes of the interior are probably more nomadic than those inhabiting the coast districts or the river borders, which is, no doubt, entirely due to the more scanty food-supply in this locality. Their vast territories have almost constantly to be roamed over by them for the purpose of securing a living; and it is only near the larger rock-holes that they are sometimes able to make a prolonged stay. This is probably also the reason why, as a rule, only small assemblages are met with, because large numbers would find it difficult to get sufficient food in the same place.

Their sleeping-place is the bare ground, on which they lie without the least covering, and only warmed by a couple of small fires, one on each side, that require frequent remaking during the night. When a number are together, they make a row of fires, and lie between them alternately, and in this way make one fire serve two of them. The custom of lying quite naked they are so used to that the native who accompanied us for some time would divest himself of all the clothes we had given him before he laid himself to sleep, although the nights were very frosty. The habit of going almost instantly to sleep at will is an enviable advantage of their constitution, because without it their night's rest would not refresh them much, on account of the frequent necessity for replenishing the fires. As soon as they begin to feel cold, and wake up in consequence, they rake the embers together, and having put a few fresh sticks upon them, they lay their heads down again, and are off to sleep in a few moments.

During wet weather they build brush huts, or rather shelters, which are easily erected when required. Two forked saplings are placed together, forming a triangle with the ground, and leaning a little away from the weather side, are supported by a third sapling. The apex of this triangle is about five feet from the

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ground, and on it rest one or two somewhat longer saplings slanting against the wind. Over these are placed bushes in such a fashion as to form a semi-circular, roof-like shelter, which at times is covered with grass or tussocks of spinifex to keep out still better the wind and weather. (See pl. 30.) Abandoned shelter-places of this kind are frequently met with throughout the country—single ones, or in groups of two or three. Owing to the ease and rapidity with which they are constructed it is less troublesome to build a new one than to travel any distance in search of an old one. This accounts for their being met with so often in a country where rain may sometimes not fall for years, for it is only when cold beating rain occurs and the natives cannot keep a fire going that these shelters are used by them.

To use water for the purpose of washing the body seems to be, in their opinion, a gross waste of this valuable element—at least, I have never seen them use it for any other purpose but to drink. They certainly rub themselves at times with grease, but more frequently with ochre all over the front. The ochre is ground on a flat piece of rock with a convenient handstone, and with this the adhering coloring-substance is rubbed on to the body. The greasing no doubt makes the skin supple and comfortable, but the application of ochre and similar substances cannot possibly do so. However, this and other pigments such as pipeclay and roasted gypsum are in frequent use; the last-mentioned, as a rule, only for particular markings and designs, the symmetrical curves and lines of which give them at times quite a picturesque appearance. (See pl. 20, 22-27.) Charcoal is also sometimes smeared over the face, and one individual I met had rubbed himself all over with a greyish clay that gave him quite a light appearance. The hair of the men generally receives a considerable amount of attention. After a good meal I have seen them loosen it out and work the fingers through it like a comb for some time, and then with care and deliberation fasten it up again. Nearly all tie the hair back from the forehead at times by winding a twisted string made of either human or opossum hair several times very tightly round the head. Some also bend the hair under at the back and form it into a chignon-like knob (pl. 21) by winding the string crossways back and forward. This gives them a strikingly peculiar appearance, and as the hair is very tightly pulled back, so that the string almost cuts into the skin at the forehead, this head-dress must be rather uncomfortable; but it seems the blacks have got used to it, or probably endure it to show their fortitude. During the day's march this chignon serves as the receptacle for small things that may be found on the road. Often a handful of scented grass is turned in with the hair, and some I have observed to put an ornamented stick crossways through it. At

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times the knob is formed on top of the head instead of at the back of it. A plan also very frequently adopted is to fix up the hair by the application of grease and ochre, forming it afterwards into strands the thickness of a finger. When this is dry and the head violently shaken, or sometimes during running, a clattering sound is produced. Some had very short hair from the front to the crown of the head, as if it had been cut; but it must either have been pulled out or singed off. Others I have seen to ornament their heads by twisting the fur from the tips of animals' tails into the ends of it, and letting them dangle down the back of their necks. Similar pieces of fur are also sometimes twisted into the beard or moustache. Tails either of the dingo or of the domesticated cat *(Felis domestica)*, which has become feral in certain districts, had been utilised for this purpose. Probably on account of the rarity of these animals, and because of the difficulty in catching them, their fur is more prized than that of others. I only saw the tip of a cat's tail used once, namely, near the Blyth Range, where the animal must still be very rare. (*Vide* remarks about this in "Notes from my Diary" as well as pl. 26.)

The women pay little attention to their outward appearance; only in some instances have I seen them with their hair tied back, but never made into a chignon.

None of the tribes we encountered were covered with any kind of garment; both sexes go about in a perfectly nude state. The men as a rule have a twisted hair-cord wound a few times round their body that serves to hold some of their implements, and which they tighten to assist them in bearing the cravings of hunger. In one instance only did I notice an attempt to cover the person, where a man had attached some light-colored twists made of opossum (?) hair to the pubes, just about long enough to cover the penis. (Pl. 25.) It looked almost as if it were meant for a special ornament rather than a covering, and may possibly have had something to do with one of their secret rites.

They are, without doubt, frugal-minded and happy in their way, for as long as they have enough to appease the cravings of hunger they appear merry. Towards evening they often start games amongst themselves and with the boys, such as throwing waddies at each other, which they skilfully parry, or evade by jumping aside; or they trundle a hoop swiftly along the ground and throw at it. This is done as much for the purpose of giving the boys some practice in throwing the waddy as to afford them amusement. A frequent pastime during the evening round the fire is the making of bird and other tracks on the flat surface of a padded plot of sand. Considerable arguments arise at times as to who produced the best representations, which are generally

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impressed with the fingers, and sometimes finished off with a little piece of stick. It will be seen that these amusements are always more or less instructive.

When congregated together from various districts, as was the case at the Fraser Range, corrobories are frequently held at night for the entertainment of both men and women. Only the men took part in the one I saw, which was not of special interest, but the night previous elaborate head-ornaments had been used in some special dance. As I did not see this dance I cannot describe it, but from what I heard some allegorical significance must have been attached to it, the meaning of which, however, I could not ascertain.

The very timid lot that was surprised by us at the rock-hole between Camps 43 and 44 were anxious to pat us on the chest, when they allowed us to approach, which we returned, taking it to be a sign of friendship. On a previous occasion a black attached a piece of fur from his beard into that of Mr. Streich's, which was evidently intended as a pledge of friendship.

Near Mount Squires the blacks, after receiving a gift of meat, returned thanks in their fashion, which has been more particularly described in "Extracts from my Diary," and is illustrated on pl. 29.

Approaching a camp at night the natives always shout from a distance, and only enter when they have been recognised.

They are always careful to carry a piece of burning bark with them on their day's march, or whenever they go any distance away from camp; this is partly for the purpose of setting the spinifex-grass on fire, but principally to have fire ready when about to settle down again. The dry bark of the dead "Mulga" furnishes convenient strips for this purpose, which are, as a rule, readily obtainable, because this tree is the most common in the interior, and frequently forms dense thickets in the level parts of the country. The universally-prevailing habit of carrying fire with them is, no doubt, necessary to some extent, on account of the difficulty of making fire by friction from hard wood, soft and pithy kinds being unobtainable. One of the best substances for this purpose is a dry seed-stalk of the grass-tree, which, however is very rare, in fact, the tree was only met with in a few places towards the southern part of the Victoria Desert.

From this continual habit of carrying fire about with them, one is almost inclined to believe that they have lost the art of producing fire by friction. At any rate, they cannot be very expert at it, and although I tried several times to induce different individuals to make it for me in that way, I never succeeded.

As far as the Hampton Plains, from the first time a black was

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met with at the Everard Range, I noticed a piece of lighted bark was their constant companion.

To find that the natives of the Everard Range and Blyth Range tribes use tobacco was a surprise to me. It struck me as peculiar when I noticed their lips and the corners of their mouth being colored with a yellowish-green rim, and attributed it at once to some peculiar food they might have been eating, but later on I discovered that its true cause was the sucking of a roll of native tobacco. The crude method of the preparation of this tobacco has been described in "Extracts from my Diary," and the way it is used is depicted on plate 29, where it will be noticed two aborigines have a roll of the narcotic lying on their lips.

Whilst these tribes have discovered the stimulating properties of *Nicotiana suaveolens*, they do not seem to know the more powerful narcotic of "pituri," *Duboisia Hopwoodii*, which also occurs in many places throughout the same regions.

Both plants were found from the Everard Range to the Barrow Range and throughout the Victoria Desert along our route, although in varying abundance and under different conditions of growth.

The *Nicotiana suaveolens* grew most luxuriantly about the soakages near the Everard and the Blyth Ranges, where some of its oval and glabrous leaves reached a length of over ten inches by a width of nearly four inches, and the plants stood over four feet high; but at the Cavenagh and the Barrow Ranges and among the sand-dunes of the Victoria Desert the plant becomes diminutive and dwindles down to a height of ten inches, with leaves of from a-half to one inch in length, which are here also more rounded and pubescent.

With the Barrow Range and Victoria Desert tribes I did not notice the use of this tobacco, and am certain that it is unknown to the tribes of the Fraser Range and of the Hampton Plains. The plant was not noticed by me much further than the Fraser Range, and in my opinion is likely to occur only sparingly in the country between Yilgarn and the Murchison. I did not find it at all along this route, but as nearly all the herbaceous plant-life was extinct at the time of our journey through that district my not finding it cannot be taken as a proof of its non-occurrence. As far as I could ascertain the Murchison blacks are not acquainted with the plant.

The use of the native tobacco as a stimulant is, as far as I know, only habitual with the Everard and Blyth Range tribes. In their districts the plant certainly grows to perfection in the humid soil near the soakages of the ranges, which conditions, however, may be found equally favorable at some of the ranges

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situated further north. Its use may, therefore, be more widely distributed, but not in a westerly direction.

Duboisia Hopwoodii, which is much prized by some of the West Queensland tribes, occurs throughout the central region of Australia. I collected it first at Camp 9, and found it in places all through the Victoria Desert, and have no doubt that it extends to the verge of its western limits. I have, however, never seen this plant used by any of the natives, and, therefore, think that its properties are unknown to them. It seems to me that only the prepared leaves and stalks are known outside of the district where "pituri" is gathered at present, and those natives who acquire it by barter are entirely unacquainted with it in its natural state, or else its use would have spread certainly much further than it has done, considering that generally most natives who once have tasted this intoxicating drug get a craving for it, and are always desirous of obtaining it again.

All aborigines of the interior circumcise, and also slit the urethra ;* but at what age the one or the other rite is performed I am unable to state from my own observations. That circumcision precedes the other seems to be sufficiently well confirmed by the fact that some young men where met with who had had the first-mentioned rite performed upon them, but not the latter. Most of those we encountered had one or the other central incisor knocked out, and all were more or less tattooed by scars on the chest, arms, or back. Every one had besides the mutilations and embellishments mentioned, the septum of the nose pierced, to hold the "kondell," or nose-stick, which is, no doubt, also considered an ornament, from their point of view.

From the fact that some of the young men, and all the boys, had a full set of teeth, it is fair to conclude that the removal of one tooth is to some extent connected with the ceremonies that declare the youth to have arrived at the state of manhood. There can hardly be any doubt about it that these painful operations are mainly performed for the purpose of trying the courage and stoicism of the youths, and to make them accustomed to the endurance of pain. The tattooing may besides have something to do with the distinguishing of the pedigree of the individual, but the marks are intended principally as adornment.

Regarding the mutilation of the sexual organ, it becomes rather difficult to determine the purpose which it is intended to serve. The incision of the urethra is supposed to be done in order to prevent over-population, and as this rite is principally practised where food, as a rule, is scarce, or may become so at

* This mutilation is by different writers variously alluded to as the terrible rite," the "mika operation," or "Sturt's rite."

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any time through continuous adverse seasons, this supposition appears to be the most probable one; and the adoption of this plan appears to furnish the most practical solution of this important problem, which has engaged some of the foremost thinkers of the civilised world during many decades. If, however, the very retarded mental development of the Australian race is taken into consideration; if it is further borne in mind that most of them cannot conceive a number beyond three; that they are the most improvident beings on the face of the earth: that cannibalism is practised by nearly all the tribes; that children are destroyed immediately after birth or later, and are often allowed to succumb through neglect; that throughout the whole continent the superstition prevails of killing by the "pointing of the bone," it must be admitted that their ideas are far too distorted for them to have invented a system for the prevention of over-population, which involves an enormous amount of forethought, and would, moreover, require a clear conception of the multiplication table. When it is further considered that the distinguishing characteristic of the Australian race is their improvidence, and that the lives of their enemies are readily sacrificed and their flesh eaten, the natural result of over-population would most likely be a more extended cannibalism, as has been the case in nearly all the South Sea Islands from the same cause. It is highly improbable that this race in its present state of mental development could possibly have conceived a system with a high ethical tendency, whilst their actions contradict a sentiment of such deep philosophy. And, furthermore, although they have stringent matrimonial laws in one respect, their sexual desires are so strongly developed that even licentiousness is at times freely indulged in, in the face of which fact alone it seems improbable that they are likely to deprive themselves of the least portion of the pleasure of coition. This must, however, to some extent follow the slitting of the urethra. In consequence of the mutilation of the male organ, the female has to submit to an incision by which the vagina is enlarged towards the lower side. This must also tend to reduce the excitement to be derived from sexual connection, and seems, therefore, completely against the natural propensity of these beings.

The fact remains undisputed, nevertheless, that the rite is performed, and that it acts with great effect in retarding population cannot be doubted; but whatever its origin may be and whence it has been communicated to the blackfellow is a mystery.

Considering this extraordinary rite, together with their complicated marriage laws, the existence of which have been authenticated by almost everyone who has become acquainted with the customs of the blacks, besides other remarkable features of intel-

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lectual culture—of which I shall make mention further on—it comes almost naturally to one's mind that they must be either the remnants of a highly advanced culture once possessed by this people, or that a race preceded them in this land, who, being highly cultured, were gradually suppressed, but not before implanting some important characteristic practices upon them; or, thirdly, that a shipwrecked crew of an advanced nation spread these customs amongst them.

The last supposition might have been possible, because traces of the occurrences of wrecks during remote historic times exist; but it is scarcely very probable, because in such a case these customs would have spread from a common centre, and in this case would most likely be found somewhere near the coast. However, nearly all around the coast of Australia this most important and interesting rite is not practised now, but almost universally throughout the interior.

For the second suggestion, that a cultured race preceded the present inhabitants, no traces of any kind exist. Although it is not impossible that men were contemporaneous with the now extinct gigantic marsupials that inhabited this continent, it is almost too venturesome to state such a supposition. At the same time, it is quite imaginable that immigrants settled in Australia long before the remotest time of known historic events. These early dwellers, however, belonged, probably, to a rather lower type than the present natives, and may have been identical with the now extinct race of Tasmania.

The first conjecture, therefore, seems to me the most feasible: that it may fairly be concluded that the aborigines of Australia have become a retrogressive race.

Besides the rite dilated upon above, it is strange to find the intricate marriage laws amongst them, that forbid near blood-relations from cohabiting, which shows a deep grasp of the detrimental consequences of such marriages, and involves besides a moral standard far beyond their present general conception of the ethics of life. There are, moreover, several other indications that favor the idea that the race has become retrogressive. How, for instance, can it be conceived that the present race invented the boomerang? It has been asserted that a falling gum-leaf gave the intimation for the first production of this implement. If this were true, one must attribute to the native a higher deductive talent than is at present perceptible. And, further, how can it be imagined that a black in the present state of development could have invented the wommera, this marvellous and unique lever. Admitting that the application of a simple lever comes almost naturally to anyone who has but the least experience in the practice of hand-work, the application of the prin-

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ciple to the method of throwing the spear becomes far too complicated for the intellect of a blackfellow. To this I must yet add the rite of circumcision, and the belief in the transmigration of the soul. This useless rite, that is practised by many nations, and is spread over a vast extent of the globe, elevated by many to an important religious ceremony, and retained by highly cultured peoples, although it lacks all ethical and æsthetic value, could hardly have been devised independently by the secluded Australian race. Nor could the belief in the transmigration of the soul have come to them by intuition, and consequently it is more probably the result of the imprints left behind by some highly cultured minds that influenced their ancestors.

It is almost certain that at present the origin of the rites, as well as the reason for their practise, is completely lost by the Australian natives, and that they have now become reduced by them to habitual customs, practised mainly for the purpose of retaining authority over the young men and the women.

The conclusion I have arrived at is that prior to the commencement of migration into Australia, the ancestors of the present race must have been imbued with a much higher culture than now exists, and that through stress of circumstances, and diversified conditions, their mental, and also in some instances their physical, calibre has become reduced, and the import of many of their customs has been completely lost in consequence, whilst the practice thereof is retained. If a people inferior to themselves preceded them on this continent, which is by no means improbable, these may have influenced their present condition inasmuch that they have absorbed them to some extent; for example, where small numbers of either race were brought into contact with each other in remote parts, where neither were numerically strong enough to suppress the other, or where the males only were killed and the women allowed to live. Such admixture may to some extent have influenced the mental and physical condition of some of the tribes, and consequently the diversity now noticed between many of them may not be due solely to the difference in the abundance or otherwise of the food supply.

These conclusions are borne out by the facts that the rites of circumcision and mutilation are conjointly practised nearly throughout the interior of the continent; that the one or the other is practised in the intermediate tracts, and that neither is practised by most of the coastal tribes—in fact, as far as I can ascertain the Kimberley coastal tribes are the only ones of this class who practice these rites. To explain this peculiar phenomenon it must be supposed that the conservative dispositions were more tenaciously retained by the natives of the interior than with

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those living near the coast, which is not difficult to understand when their secluded manner of life is considered. An analogy may be found in the South Sea Islands, where the language and customs on some of the isolated and remote islands are often identical, whilst intermediate places inhabited by the same race have altered considerably.

It can, therefore, scarcely be credited that these rites should have had their origin in the arid interior, and it is justly presumable that at one time all tribes practised these rites alike, but that they fell into disuse along the coast, where life is more variable, when the tribes increased in numbers; but were scrupulously retained amongst the less expanding tribes of the interior.

Whence and how the aborigines came to Australia is as yet a problem veiled in obscurity, and, therefore, for me to speculate upon it at present would be too venturesome; it is to be hoped, however, that the steadily-advancing progress of ethnological and anthropological knowledge will find the proper clue to it, and bring its solution before the natural conditions of the aborigines are entirely disturbed or the race has vanished.

Water and Food Supply.

The western interior of Australia being entirely devoid of rivers and permanent creeks and almost of any other permanent water, the tribes inhabiting this region have to depend upon the occasional rainfalls and thunderstorms for their water supply.

In favorable seasons, no doubt, many large claypans and temporary running streams afford ample opportunities of securing this necessity; but during continued dry seasons they have to depend solely upon "rock-holes" and "native wells." The rock-holes seem to be almost a special characteristic of this portion of Australia, and without them it would be impossible for the natives to exist. They are mostly found in granite, a softer mass or nodule having been weathered away, thus forming natural cisterns of various shapes and dimensions. Some of them will hold many thousand gallons when filled, and as the water cannot escape by percolation the supply will last for a long time. To prevent animals getting at the water, most of the rock-holes are partly or entirely filled with loose-lying sticks, which practice, necessary as it may be to save the water, deteriorates its quality considerably by making it often look quite black and giving it a fetid smell and taste. Coming to a rock-hole once some of the camels drank, and one of them micturated on the rock; the flow was prevented from getting into the water by some of the blacks placing handfuls of earth quickly in front of it. They behaved in a very excited way at the prospect of having their water polluted, which contrasts rather favorably

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with many of their careless and dirty habits. In sandstone formation these rockholes are never of great extent, and from the nature of the rock the water as a rule will not remain so long in them.

The native wells are irregularly dug holes, rarely very deep, and mostly found near the base of some range or hill where a concentrating catchment-area promises a good soakage. These holes are also often filled with sticks and debris, and frequently even with sand, to prevent evaporation and hinder animals from getting at the water. Certain small soakages under rocks near the base of some hills, known to the natives, and yielding only small supplies, are always completely covered up again when leaving. The supply from such sources is scarcely better than that obtained from the roots of the mallee. This last-mentioned supply is no doubt in many places often resorted to, and when the proper kind of root is found yields a splendid, clear, and cool water, that at times drips rapidly from the broken roots when they are held vertically. It requires, however, the knowledge of an aborginal to hit upon the proper tree, for which there are probably some outward signs only known to them, because my own efforts led me only accidentally to a root holding water, after trying a good many before without obtaining a drop.

Sometimes hollow trees harbor water, and preserve it for a long time from evaporation. The keen eye of a black will easily detect such a reservoir by one or the other indication. I remember on one occasion that a native noticed a string of ants going up and down a tree, entering and emerging from a small knothole about his shoulder-height from the ground. This was quite sufficient indication for him, and making himself a tube from a straight twig, by loosening the bark between his strong jaws, and then stripping it, he obtained a drink by sucking the water up through this impromptu syphon.

The "wanna" and the "wera" are the constantly accompanying implements of the blacks of the interior, and are frequently used during the whole day for the purpose of digging, either for water or food. The wanna is used for loosening the soil, or as a lever when roots or stones require lifting, and with the wera the loosened stuff is scooped up. It does not take long to go down a couple of feet with the help of these two implements, and the presence of either water or food, whatever the object of the search may be, is soon proved.

Various are the objects looked for underneath the soil, and as the occupation of the native consists mainly in procuring food, he tries to secure it at every opportunity, and with this motive his eyes are constantly sweeping the ground for tracks and other indications of game. Spying the track of a large lizard, he fol-

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lows it to the hole, and with the wanna soon removes the sand for several yards along the burrow to the lizard's tail, by which it is caught, and soon despatched by swinging it in the air and knocking its head upon the ground or against the slantingly-held wanna. At times when these lizards have long and divergent galleries excavated only a little below the surface, the blacks break down these burrows with their heel until they feel the lizard move underneath. A more exciting piece of work than digging for lizards is the excavating for the quick, little, banded anteater, *Myrmecobius fasciatus*, which animal often makes its lair over three feet below the surface, and perhaps a longer distance away from the entrance of the burrow. Here the wera comes greatly into requisition for the removal of the soil when it requires lifting as the hole is going down, because the wanna is only useful for loosening or throwing the earth backward when working near the surface. To secure a single pregnant female ant of a wood-boring species, the ground may often have to be dug several feet deep along the side of a decayed mulga-tree, because these insects harbor, as a rule, near the bottom of the tap-roots of the attacked trees. The much inflated abdomen of these little insects is sometimes distended to the size of a small marble, and contains a bright, light-yellow-colored fluid of a honey-like sweetness, which is much relished by the natives, and generally at once eaten when secured. Other articles of food, which are almost invariably eaten as soon as they are found, are the "munbau" and the "marditti," the white larvæ of wood-boring insects. The first mentioned of these is the largest; it is the larva of a cossus-moth, and grows to the size of a man's finger. The marditti is much smaller, and most likely under this name several kinds of wood-boring larvæ are included. Small birds' eggs are also generally devoured at once, and so are fruits, berries, and other small objects, such as the exudations of edible gum for instance.

Nothing comes amiss to the blacks that can possibly be called into requisition as nourishment, but throughout the greater part of the interior, as far as the Expedition went, their principal flesh-food is provided by the small marsupials that harbor under the *triodia*-tussocks, and are commonly called "spinifex wallabies" *(Largochestes hirsutus)*, occurring abundantly in many places in the *triodia*-region. This pungent grass affords a good shelter as well as food for this animal, which lives to a great extent upon its stems. The blacks are very expert at killing the animals with the "turtimbo," or short throwing-stick, which they handle dexterously, rarely missing their aim when they throw it. However, the many large porcupine-shaped tussocks of *triodia* that cover the ground shelter the little animals well in their quick

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and erratic course. If, therefore, the natives cannot get a clear shot at them within 30 yards they rarely throw the weapon. To enable them better to get at this game they constantly burn large patches of the "spinifex" grass, which is one of the most easily ignited substances, green or dry. It is only necessary to drop a few sparks into a tussock, and the sturdy plants will soon flare up with a crackling noise, the flames rapidly spreading before the breeze.

About the ranges and granite-hills on the northern margin of the Victoria Desert great numbers of rock wallabies (*Petrogale lateralis*) are found that are well protected by the many shelters in the fissures of the rocks and the cavities underneath them. These animals are very shy during daytime, and run quickly along the ledges and crags when they are disturbed, disappearing from sight with astonishing rapidity. Towards night, however, they leave their shelters more leisurely to feed on the surrounding ground, their favorite feeding-places being often indicated by well-beaten paths leading towards them. Soon after sunset and during the short twilight they hover about the rocks, sitting upright and brushing themselves in the warm air, which is at this time radiating from the rocks that have been heated by the sun during the day. During this time they may be more easily approached, and without much difficulty stalked to within spear's throw. In many places throughout the country and particularly near some of the rocks, brushwood fences are found that serve, or have served, the purpose of trapping game. These fences are about two feet high, and simply made of broken-down shrubs and branches of trees, mainly mulga, and converge to an angle after extending for a long distance over the ground. Sometimes they are over half a mile long and no doubt have been erected for the purpose of having the animals driven into for a final battue at the angular portion. Near the rocks I have seen them constructed in a zigzag shape, with a self-acting trap at the apex of the angles furthest away from the rocks. This trap is simply a squarely dug hole just outside of the brush-fence about 18 inches wide and four feet deep, with almost vertical sides, which is sometimes lightly covered with a few thin branches. At the inner side of the fence a piece of rock about six inches high is placed a few inches from the hole, and a bar consisting of a stout sapling is laid across the corner on top of the fence above the stone. The latter contrivance seems to be intended partly to hide the hole and partly to make the game jump the stone and tumble into the hole, from which it cannot escape. The nocturnal habit of the rock-wallabies is here taken advantage of, but probably at times the game is also driven into the traps. (See pl. 19.)

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About the Everard Range some opossums are found, which are easily caught in the stunted mallee-trees. Whether this animal occurs in the Victoria Desert I am unable to state, not having had an opportunity of securing one during the march across that district, but it is very possible that it does, because it is known about the Fraser Range, where I did not see it either, but obtained the name for it from the blacks by means of a prepared skin. At the same time they could not give me the name of the rock-wallaby and of other animals I showed them the skins of.

Kangaroos and emus occur throughout the interior, for tracks of these were occasionally seen by me during the journey, and the animals came several times under my observation near the various ranges, where no doubt they occur more frequently than in the waterless districts. This large game is stalked and speared, and may be at times it is also driven into the brushwood enclosures mentioned above.

The eggs of the emu yield a good food supply in early spring, and mallee hens' *(Leipoa ocellata)* eggs must also be plentiful at certain times, as the nests of these birds were frequently seen.

A considerable number of eagles inhabit the "spinifex" country, where this bird preys mainly upon the *Largochestes*. As none of the trees grow to a great height, the nests are easily robbed. That some of them had been searched for eggs or fledglings was proved by the presence of saplings placed against several trees to assist the natives in climbing. Eagle eggs I had once an opportunity of eating, and found them very palatable, and in no way rank, as one might reasonably have expected, considering that the bird lives entirely upon flesh-food, and that its own flesh smells very offensively. In fact, it is so offensive that our dog would not eat it after it had been roasted, although he was eager for a little fresh meat. The blacks, however, seem to eat the eagle, because they always regretted when the rifle bullet missed them—as was frequently the case during the early part of the journey whilst we had aboriginal visitors.

All the other flesh-food the blacks secure is very tasty, if prepared in their own fashion, namely, cooked in the hot sand under the embers of the fire, whether it is opossum, lizard, or egg, because it retains its flavor to perfection by broiling in its own juice. I have tasted all these things, and found them delicious, particularly the iguanas. The fur of the animals is removed by plucking it out, and the entrails are abstracted through a small incision, that is stopped up with a little grass; when cooked, and the skin peeled off, the flesh looks as inviting as any dish can. The lizards are cooked as they are caught; the skin peels easily off when they are done, and the entrails are conglobated. When

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in a hurry, I have also seen the blacks put the game, whatever it may be, on top of the fire, which is a quicker process of cooking it, but does not make it so palatable, as in that way it often gets scorched on the outside before it is scarcely heated through.

The vegetable food is far less tasty, and also less nutritious. Principally the seeds of the various acacias and some grass seeds are looked for, and, when pounded, are mixed with water and formed into cakes, which are baked in the primitive fashion on hot ashes. Near some of the larger rock-holes the flat surfaces of the surrounding rocks bear traces of the grinding operations, that most likely have been carried on in the same locality for generations. Many of these spots are not only worn quite smooth, but are also ground away to some depth into the rock, forming concave indentations through repeated working in one place. Small oval-shaped boulders that have been used for grinding, and are worn smooth in consequence on the one side, can be found lying about in many directions; they are of different sizes, and have evidently been used either with one or both hands.

The seeds of the Kurrajong *(Brachychiton Gregorii)* are eaten when roasted, and are then a very agreeable tasting food, much resembling pea-nuts. Very frequently when this tree was met with in the Victoria Desert some bruised roots of it were found lying about, indicating that they had been chewed for their sap and the nutriment they contained. The taste of the young roots somewhat resembles that of nuts, and on the bark of these trees nearest the wood a thin layer of a glutinous substance is found, which is of a similar flavor, though rather sweeter, but certainly of a very pleasant taste. However, this seems to be only a kind of make-shift food and is probably only resorted to when hunger is pinching very hard. The same may be said of the food prepared from the bark of the mallee roots, although these trees occur more abnndantly and are oftener called into requisition as food suppliers. Only the bark of the younger roots is used—that is to say, those measuring from half an inch to nearly an inch and a half in diameter; the bark of the larger roots being too woody. After the bark is stripped it is placed on a slow fire, and in a little while the outer black skin becomes blistered and loosened by the development of vapor, and is then easily removed. When this is done the bark is dried on the embers till it gets perfectly crisp, and then it is broken into small fragments. Of these a handful is taken and firmly held down by the left hand on a thick piece of bark, and with the wanna firmly held in the right hand it is pounded into a kind of dust that closely resembles the broken awns of barley. The skill displayed by the women during this manipulation is to be admired. An opening of only about an inch in diameter is left between the thumb and index finger of the left hand just

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about wide enough to admit the end of the wanna. This being a heavy cudgel of about four feet in length and an inch thick, with the one end rounded and sharpened and well hardened in the fire, is held a few inches above the sharpened end and brought down with some force upon the firmly pressed bark. An unsteady hand would never hit the small surface with the accuracy necessary to avoid inflicting very nasty wounds upon the other hand. However, the strokes hit the right place unerringly in moderately rapid succession, which excited my astonishment the more because the wanna has to be held somewhat slantingly.

Several herbaceous plants yield them food also, but I will only mention the Nurgu-nurgu *(Thysanotus Patersoni)*, the tuberous roots of which are frequently eaten and generally consumed raw, but sometimes they are roasted. The taste of these tubers is rather insipid and watery (ate them only raw), but I have no doubt that it makes a wholesome diet, and to some extent quenches thirst; the plant occurs plentifully in places.

According to information received from some coastal blacks, those of the interior are cannibals, and rather despised by them for this reason. Some of the white settlers corroborate this statement, and considering the terrible hardships and frequent times of starvation they must have to endure during prolonged droughts it can hardly be a matter of surprise if flesh-hunger leads them to resort to such a practice. Whilst they domesticate the dingo and make a pet of it, they also eat it, about which there can be no doubt, because I found the bones and skulls of this animal near some old camps at Skirmish Hill. An introduced animal, the domesticated cat, has become feral far into the interior, most likely from West Australia, migrating gradually eastward, and is found now occasionally more than a hundred miles to the east of the Barrow Range. Here the tip of the tail of one was presented to Mr. Streich by a native. This animal contributes considerably towards the larder of the aborigines, particularly in the neighborhood of the Fraser Range, where, as I am informed, they occur frequently.

The blacks will eat as long as there is food, and only when it is impossible for them to demolish all they have in one sitting will they reserve some for the morrow.

It may surprise many, but it is nevertheless perfectly true, that I have seen a black eat a large emu egg, two iguanas of about eighteen inches in length, and two opossums at one meal.

Native Art.

PERSONAL DECORATION.

It must be admitted that the blacks of Australia possess a certain artistic taste, and however crude their attempts at the

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reproduction of objects may be, it is apparent that the intention is to please the eye, which is undoubtedly the first stimulant for such attempts. This comes perhaps more particularly into play in the ornamenting of their bodies, in the application of colors, as well as in the decoration of their heads with feathers and other embellishments. The lines on their bodies are often very gracefully put on, and considering that every one is his own decorator, the elegant and symmetrical curves one may sometimes see upon them are not only pleasing to the eye, but on account of their accuracy almost surprising. Some of the more striking designs are depicted upon the figures represented on plates 12 to 21.

Although no doubt the tattoo-scars are considered by them to be ornamental, the want of symmetry forbids their being classed as artistic from our standpoint, but as long as it is acknowledged that they are intended to be decorative, art is implied from a blackfellow's point of view.

ROCK-PAINTINGS.

The rock paintings are mostly imitations of objects coming frequently under their observations, and considering the very scanty choice of material at their disposal, as well as the primitive appliances for executing them with, they are in many instances very creditably reproduced. Some no doubt are meaningless, and are probably only intended for pleasing lines, or the attempt to produce such. Others probably may convey a distinct meaning, somewhat in the sense of those conveyed by the message sticks, and consequently deserve to be considered as true symbolic hieroglyphics. The consideration of these, however, is difficult, principally on account of the insufficient knowledge of the language of the blacks possessed by us, and the consequent difficulty of grasping the idealization of their thoughts.

According to their execution, which differed considerably and proved the greater or lesser skill and patience of the painters, the impression made by these paintings were very variable. This will be more particularly touched upon when the different paintings are separately described.

It is well worth noting that those observed were found within the South Australian boundary, and none at all were met with in Western Australia. This may to some extent be due to the absence of sandstone, because in the granite formation and sand-drifts, rock-shelters and flat escarpments rarely occur. Only the paintings from Mount Illbillie soakage, at the Everard Range, and one other group were found on granite; all others were on sandstone.

The first group of rock-paintings met with were those at the Arcoeillinna Wells, which were known to previous visitors. Be-

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fore describing them, however, in detail, I reproduce the notes made on the spot at the time of our visit.

"Near these wells, which were sunk by the Water Conservation Department of South Australia a few years back, are two rock shelters, known to contain paintings by aboriginals. Coming from the east, the low sandstone range near the wells runs almost north and south, and is broken by a narrow gap scarcely more than a chain wide. On the left side of this gap, facing towards the north-east, these two rock shelters are situated; the one is five paces deep, and double that in length, and the other only about one-third of these dimensions. The larger has two openings, having a natural pillar nearly in the centre of its face. It is well arched, and high enough to enable a man to stand upright in the greater part of it. In this cave most of the paintings are found, in fact the roof, as well as the sides, are more or less covered with them, and in many cases they overlap one another. Several broken native grinding stones indicate that this place has been a favorite spot to grind up the various pigments, and the many daubs upon the walls leave the impression that the effect of the colors has been tried upon them after their preparation. One is vividly reminded of the rear parts of a painter's workshop, where all the paints are tried on the back of the doors and the walls, and the brushes are cleaned of the paint after work.

"The designs are undoubtedly of different age, and in many instances, particularly on the roof, which is nearly black, are obliterated by smoke. No doubt during wet weather these shelters have often been inhabited by natives, indications of whose visits are left behind in the shape of ashes and cinders, and a great number of quondong stones strewn over the floor.

"I have made copies of the best-preserved and most interesting designs, many of which occur repeatedly. Such an enormous number of birds's tracks are everywhere represented, that it almost seems as if this design has been the one to try the brush upon first. The copies are kept, as near as possible, in proportion to one another, and are reduced to about one-twelfth to one-sixteenth of their natural size. The colors are white and dull red, produced probably by pipeclay and ochre.—*Arcoeillinna Wells, 25th May, 1891.*"

Plate 9.

The kangaroo and bird-tracks, of the latter mostly those of the bustard and one of an emu, are easily recognisable; and so are the snakes, one with a dilated head near the left upper corner and the other without a head near the lower corner on the same side. Another representation to the right of the upper snake is undoubtedly meant for a fringed apron, as is worn by some tribes

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after certain rites have been performed upon the wearer. The large white design in the right lower corner may perhaps have been intended to represent a kangaroo. It is a very old painting, and was much obliterated, and, as will be seen, is painted over with bustard-tracks. Four of the red designs may probably represent shields, but as it is doubtful whether the tribes living near the place use shields, and if so scarcely any of that shape and dimension (presuming that they were a representation of or about their natural size), this remains an open question. As far as I know, only the tribes near Adelaide and those living about the mouth of the Murray had wide shields something like the paintings they represent. Wide shields are also used by the coast natives of Northern Queensland. But how could the painter have become acquainted with this shape? The drawings, it may be said, are probably produced by an ambassador of the tribes that have shields like them, either as a memento of his visit, or to illustrate these objects to the tribe visited by him. Even this is scarcely credible, and therefore I must leave them unexplained, together with the other peculiar representations. Circles, and circles within circles, are of very frequent occurrence, as will be seen later on, and have undoubtedly a symbolic meaning, which it is hardly safe to speculate upon. The divided white oval with cross bars will also be referred to later on.

Plate 10, *a*.

"About two and a-quarter miles to the n.n.e. from Arcoeillinna the Wa-Wee rockholes are situated. These are basins in the bed of the watercourse, and are likely to hold water for a considerable time when once filled. The neighborhood has been the camping-place of natives from time to time, traces of whom are abundantly perceptible. In the sandstone cliffs close by are found a number of cavities fit for shelter, some of which contain paintings. But only those in one of the largest are worthy of note; in all the others only bustard tracks are found. The cavity opens to the south, and is only a few paces wide, and about four deep, but not high enough to stand up in. Mr. Streich copied some of the drawings yesterday, of which I have taken a tracing. They are done with red ochre."—26, 5, 91.

The readiness with which the blacks adapt already existing outlines to their intended designs is here particularly well exemplified. A natural depression in the rock resembling the shape of an eye is utilised to represent that organ, and the adaptation is certainly a success. Another such adaptation (not represented) was noticed in a similar cavity close by, where the cracks and cleavages formed irregular squares on the uneven surface of the rock. These had been margined with red lines, and

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represented a large turtle. A representation frequently met with is a snake about to enter a natural crack. On this plate we see a snake going towards what seems to be intended for a crack. The design near the bottom represents a much enlarged centipede, and so probably is the one above it, but it is more clumsily executed. Besides a kangaroo and two bird-tracks, easily recognisable as such, the other designs are abstruse; but a certain elegance in their execution is very striking. Here the circle within circles is also met with.

Plate 10, *b*.

These marks were found on the flat face of sandstone at Camp 12 on the western side of the Coffin-shaped Mountain (a sandstone ridge, so named on account of the resemblance to a coffin from the distance), near the base of a narrow precipitous valley, and about a chain below a small water reservoir under an overhanging rock.

The marks are very regularly drawn, particularly the largest of them, and in my opinion were put on the rock to mark the place of the water.

The barred oval mark on Plate I. is most likely intended to convey a similar meaning.

Plate 11.

The drawings represented on this plate are placed in the same relative position as they were found, and reduced to about one-twelfth of the original size.

The uppermost, no doubt, represents a huge snake, and the one just below to the left is a splendid representation of an iguana. Neither have a head, which I notice in most cases is omitted or hidden when reptiles are represented. The two imperfect human foot-prints have undoubtedly been produced by placing the foot, previously smeared with the pigment, against the rock-face; it will be noticed that they are both prints of the same foot, namely, the left. Two other designs are easily recognisable as representing baskets; both are excellent drawings, particularly the one to the left, which is beyond dispute the best representation of an object found amongst the whole series reproduced. Whether the perspective of this drawing is produced intentionally, or is merely the result of an accident, cannot be decided positively, but I incline to the last supposition. Perspective, although sometimes applied without any particular knowledge of the rules, is generally the stumbling-block of amateur artists; the want of a correct application, and often a total absence of it, characterises their attempts at reproduction. Even such an advanced nation as the Chinese were entirely ignorant of perspective, until photography made them cognizant of it, and they now apply it at times, though

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they are probably still unacquainted with its principles. Children's drawings are always "flat," because they try to draw things as they are, and not as they appear. However, admitting that the special peculiarity of the drawing is merely accidental, it cannot be denied that the lines are extremely graceful, and must have been executed by a practised hand.

Again the circle-within-circle design is met with, besides two other delineations, that challenge explanation.

These drawings are from an extensive rock-shelter near the soakage at the base of Mount Illbillie, and depicted upon granite.

Plate 12.

The locality of these remarkable paintings is about 30 miles to the south from Camp 4. This point is the termination of a low sandstone ridge, which, starting at some elevated ground to the north, extends a few miles into the sand-drifts which cover the greater part of the country. The ridge wedges out, so to say, both horizontally as well as laterally; and at its southern end has a very distinct, almost central depression about a chain wide, which is flanked by more or less vertical escarpments for some distance on both sides. Near the end of one of these escarpments facing the west, the paintings are exposed on a very flat surface of yellowish-grey sandstone. They cover about 12 feet of a plane surface over six feet high, and are in splendid preservation, which is particularly remarkable on account of their complete exposure to wind and weather. As will be seen, three colors are used in their production—red and white, previously met with, and black. This black color is probably produced with powdered charcoal, and as it will not form a pigment with water, fat must have been employed with it. It is not improbable that in this case fat was also used with the other colors, because of their fine preservation, which could hardly be expected if they were only mixed with water.

When my eyes fell upon this painting, the impression it made cannot be otherwise described than that of delightful surprise, and considering that it was quite an unexpected sight, after several days journeying over sandhills, this break in the monotonous landscape produced a charm and flush of excitement that was not previously experienced.

That this is the finest sample of aboriginal iconism met with during the journey of the Expedition cannot be questioned, and probably nowhere else in Australia has anything superior yet been found.

No satisfactory explanation of these figures can, however, be given, save that a few are intended to represent snakes, and that the rows of bustard-tracks cannot be mistaken. All others are

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incomprehensible; but that they were not executed simply for idle sport becomes more evident the longer one looks upon them. They probably possess a symbolic meaning, which I confess myself unable to elucidate. I must, however, here express regret that in former times, when on account of the greater number of natives, the opportunities for observation were vastly more promising than they are now, so little information has been acquired as to the ideas of the aborigines, and the meaning of their peculiar markings. The best chances of elucidating these symbols are now, alas, almost hopelessly lost, because wherever similar peculiar markings are met with in other parts of Australia which might perhaps furnish a key to the rest, nobody is left to translate them. The few living remnants of the numerous decayed tribes have either entirely lost all knowledge of the meaning of these markings or have become, through contact with the white population, so addicted to lying that their evidence is entirely untrustworthy.

The preservation and correct reproduction of everything at present obtainable may yet do something towards solving the question, Whence the aborigines of Australia? But this task would be incomparably lightened if the true significance of these tokens could be obtained from the authors themselves. Correct information about these matters and a comprehensive knowledge of the language, together with an accurate understanding of their traditions and mythology, are the most promising factors in the solution of this problem, to elucidate which ought to be considered not only in the light of a highly interesting anthropological research, but also a duty we owe to the previous owners of this continent, as well as to our descendants.

Close to Camp 4 some paintings existed on the face of an overhanging rock, but I have not noted any particulars about them. I was promised that they should be copied during my five days' absence from camp, but it was neglected. On the dioritic dyke that crests the ridge of the granitic range lying about two miles to the south, I noticed two rings, about eight to ten inches in diameter, the outlines of which were about a quarter of an inch wide, chipped or scratched on the flat face of a block of this hard rock. On the dioritic dyke at the top of Sawback Hill two or three marks like a "broad arrow" were observed to have been worked into the rock. These I have not seen, but they were probably intended to represent emu-tracks.

Plate 13.

"About five miles s.-w. from Camp 6, at the first rocky hill, paintings were noticed on a rock-shelter facing us as we came along. I made a hurried sketch of them. They are done with

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a certain freedom of hand that makes them very interesting. The rings, which are done in red ochre, are executed with particular care. Close to the rock-shelter is a small waterhole, and further along in a rent is a larger one of about seven feet in diameter."

The foregoing are my notes made on the 22nd June, 1891, which give a fair description of the locality.

Here again three colors have been used, which are retained in the facsimile reproduction of the drawings.

Excepting the two huge snakes at the bottom of the plate, the only realistic representation is the black design to the left, which depicts a branch with leaves.

About the black figure to the right of the branch, it has been suggested to me that it may be intended for a rider on horseback. This is not improbable, because this part of the country is close to where several exploring parties have passed along, and consequently some blacks must have seen a rider, and this would no doubt create a deal of discussion, and might easily have led to an attempt at illustration.

The other designs I can only comment upon as far as their execution goes, which it will be acknowledged is excellent, and shows a deal of skill. The accuracy with which the rings are finished, and the freedom of sweep with which the principal lines of the design to their right are formed places the drawings amongst the best of their class.

This completes the notes on the rock-paintings, which, it will be observed, were found, with one exception, within a comparatively limited area. The exception are the circular marks found near Camp 12, which locality lies probably within the territory of the Blyth Range tribe. If the highest elevation of the Everard Range is taken as the centre, the localities all lie within a radius of 75 miles, and the paintings are, therefore, probably entirely attributable to one tribe, namely, the Everard Range tribe, as I have called it from ignorance of their correct tribal name.

A comparison of these paintings with those from other localities and produced by other tribes, I feel certain, will prove an interesting and instructive study. I hope, therefore, that some iconographer better qualified than myself will succeed with the aid of other available material in interpreting their significance.

ETCHINGS ON BARK.—WORMA.

The etchings on bark, of which three representations are given on Plate 16, were obtained at the Fraser Range, the only place at which they were noticed.

These etchings are of special interest as a proof that the desire,

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noticed amongst aborigines in all parts of the globe, to figure natural objects is also inherent to the natives of Australia. They have no particular meaning beyond the attempt at imitation; but because flat rock-faces and rock-shelters are not available in this semi-desert land, it seems to me that these slips of bark are adapted by the talented of the tribe to display their skill upon. From the explanation given to me by the native who made the etchings, or at least who possessed them, the artist intends to be a landscape painter. No. 1 he gave me as representing his "country," which means probably the hills and valleys of the Fraser Range. In No. 2 the principal figure represents a tree, and No. 3 is intended for another part of the country.

There is this broad distinction between the rock-paintings and the bark-etchings, that in the first case single objects only are selected for representation, whereas in the bark-etchings an attempt is made to reproduce more complex subjects.

The markings are produced by means of a stylus of hard wood upon the freshly-peeled bark. (See "Worma" in Vocabulary.)

CARVINGS.

Under this heading I also include the markings by charring with a pointed ember, the execution of which I observed on several occasions at the Fraser Range. I have seen Kondells, Tallas, and Unains marked in this way, and, as far as my experience goes, this method of ornamenting is the one most prevalent amongst the tribes met with at the South-Eastern point of our journey. The Balgas are frequently only jaggedly incised by means of a sharp stone, without the least attempt at design. The markings of the message-sticks, when not made with a pointed ember, are cut with a sharp-edged piece of flint, and sometimes very fine lines are produced in this way, as shown in fig. 3, pl. 15. None of all this carving can be regarded as very artistic.

It struck me as being very remarkable that not a single implement or weapon found with any of the aborigines met with from Everard Range to Fraser Range was in the least ornamented with carvings of any kind, with the exception of a Yilbar seen near Fraser Range.

Further North, however, and particularly in the Murchison District, nearly everything I saw was more or less carved, except the spears and the boomerangs; but having seen only four boomerangs altogether, I will not assert that they are always without engraving. Not only is carving very common among this tribe, but the designs are mostly of very superior execution, and often very regularly outlined. The two Meros (pl. 14) are very good examples, particularly No. 3, and the shield (pl. 18) is perhaps one of the most accurately finished pieces of native workmanship that can be found.

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The Yilbars represented on plate 17 all show various designs, which are more or less carefully engraved upon them, and are very probably each made by a different native. These implements, which are only used during the performance of secret rites, and are afterwards carefully hidden from the sight of women, have undoubtedly each belonged to a different native. Seeing so many various designs, it seems that these are the particular choice of the individual, which no one will copy, as it is, so to say, the invention of the owner, and his special mark. The ownership of each Yilbar would probably be known to every adult male of the tribe by the particular markings on them.

That any special symbolic import is attached to the engravings on the Yilbars does not seem to me very probable, because there is no distinct repetition of any design to be found upon them; all that they have in common is a kind of leaning towards a zigzag character in many of the carvings.

Speaking from memory only, I think the Yilbar seen at Fraser Range was not nearly so well carved as the Murchison examples.

That there is such a marked difference in the development of the tendency to beautify their goods and chattels between tribes that live under much the same conditions, and have so many identical rites and customs, is rather an extraordinary fact. It must be considered a proof of an intellectual superiority of the Murchison tribe, which their manners and customs would not otherwise indicate.

The Weapons, Implements, and Utensils

Seen with the different tribes encountered during the journey; with descriptions.

1. Warrina. Wangarabunna tribe.

At the Camp near the Warrina Creek I observed some blacks engaged in making boomerangs. Sitting on the ground with the left leg turned under, they hold the piece of wood to be worked at by one end in the left hand, resting the other end on the ground, where it is grasped between the big and the other toes of the right foot. Whilst held in this manner the piece is shaped by means of a stone chisel held in the right hand, the arm being steadied at the elbow against the knee of the right leg.

All the boomerangs I saw were of the large kind, such as are used for throwing along the ground, and sometimes called fighting boomerangs. The blacks had none of the smaller, more bent kind, used for throwing in the air, and which return to the thrower.

The weapons and implements observed are:—

Spear, made of a thin stick of hard wood in one piece about

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eight feet long, with a single barb fastened near the point with sinews from the tail of a kangaroo. At the opposite end a hollow allows the weapon to rest against the hook of the spear-thrower.

SPEAR-THROWER, over two feet long, plain and narrow.

BOOMERANG, large kind.

DIGGING-STICK, *Wadna*.—This is frequently called yam-stick by the whites, and the commonest implement in use by the blacks. In fact, it is their constant companion, more particularly that of the women, when collecting food. It is merely a smooth stout stick about four to five feet long, slantingly thinned at one end, with a rounded point, which is well hardened in the fire. It serves for digging up roots and tubers, and for dislodging snakes and lizards from the ground.

CHISEL, *Kandru*.—Described and figured elsewhere.

FOOD-BOWLS.—A small kind made of wood.

OCHRE.

TWISTED-HAIR STRING.

I paid only a short visit to the native camp, and intended to return to obtain all the names of these articles, besides other information, but was unable to do so.

2. EVERARD RANGE TRIBE.

SPEAR, *Winda* (Pl. 16, figs. 4 and 5).—Two kinds: the one with a barb near the point, and the other with a smooth, flattened, and pointed head of hard wood about eight inches in length fastened to them. Some of the shafts are whole, and others made of two pieces, and spliced together. Sinews are used for the splicing of the shafts and the fastening of the barbs, &c.

SPEAR-THROWER, *Mira nakata* (Pl. 14, fig. 1).—In shape this implement differs considerably from all others of its kind. It is slightly curved backwards, convex at the back, and deeply concave on the upper side. On account of this hollowness, that will allow the spear to lie perfectly free between the hook and the hand, it is probably better adapted for its purpose than any other known. Length about two feet two inches, width three and a half inches in its widest part, narrowly tapering towards the handle. The hook is fastened with sinew and cement, and at the other end a piece of flint, that serves as a chisel, is attached with a lump of cement, which prevents the hand from slipping when the spear is thrown. The implement, it will be seen, serves for making weapons and tools, as well as for flinging the spear.

CHISEL, *Iduru* (Pl. 14, fig. 5)—A sharp piece of flint about an inch wide fastened with cement.

THROWING-STICK, *Turtimba*—generally shortened to *Turti* (Pl. 14, figs. 6 and 7).—A stick made of heavy wood about 22 inches long and three-quarters of an inch in diameter, slightly

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curved and notched on one end for a handle. With the Everard Range tribe (as well as those encountered further west) it seems to take the place of the boomerang, which I never saw with them. It is a constant companion of the men, who frequently carry it under the hair-cords they wind round the body, and is used for killing small game.

DIGGING-STICK, *Wanna.*—This and the next they always carry with them.

FOOD AND WATER-BOWL, *Wera.*—A small shallow wooden bowl, mostly less than a foot long, and frequently used for scooping the earth away after it has been loosened by the wanna.

FOOD AND WATER-BOWL, *Mika.*—A large deep oblong water-bowl made of solid wood gouged out. It must take the natives a long time to make one (*vide* photograph of wurley, pl. 30).

3. BLYTH RANGE TRIBE.

(Seen between Camps 15 to 20).

The weapons and implements observed with this tribe are almost identical in shape and make with those found amongst the Everard Range tribe. I noticed the following :—

SPEAR, *Windu.*

SPEAR, *Kujarra.*—A small spear, made for boys to practise with.

SPEAR-THROWER, *Meru.*

CHISEL, *Wanne.*

THROWING-STICK, *Turtimba, Turti.*

DIGGING-STICK, *Wanna.*

SMALL WATER-BOWL, *Wera.*

LARGE WATER-BOWL, *Yilgalla.*

STONE FOR GRINDING OCHRE, *Abu.*

4. BARROW RANGE TRIBE.

The blacks who visited us at Camp 33 carried throwing-sticks, and some also spears. Those who visited our camp near Mount Squires carried only throwing-sticks, with the exception of one, who had a barbed spear. The weapons were of the crudest make.

5. VICTORIA DESERT TRIBE.

Those met with near Camp 40 by some of our party were not seen by me, but I was told that they carried spears and spear-throwers.

Some blacks were surprised by our party near a waterhole between Camps 43 and 44. These had spears and spear-throwers like those found with the Everard Range tribe, besides some throwing-sticks. Near the waterhole they had left a number of large water-bowls, some of which were made of thick bark, which

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was evidently displaced from a convenient outer bend of a large eucalyptus tree. A circular pad for carrying these bowls on the head was also found. It was excellently made of twisted (opossum ?) hair-string. Near Camp 33 several similar pads made of grass were found, which is evidence that the native women have to carry water with them when the tribe is on the move, and that they carry the bowls on the head.

6. FRASER RANGE TRIBE.

SPEAR, *Kadji*, *Winda*.—Barbed like those of the Everard Range tribe.

SPEAR-THROWER, *Meru*, *Wordat*.—Plain and straight (Pl. 14, fig. 2).

BOOMERANG, *Kaili*, *Wallena*.—Both the large and smaller kinds were seen by me, but not often. It seems that this tribe, like those met previously, have little use for them. Neither kind was well finished; the smaller curved rather wider and clumsier, and the larger kind much lighter than is usually the case.

BULL-ROARER, *Yilbar*, *Kundain*.— This oval instrument is used at some of the secret rites for the purpose of making a whirring sound, whence the name given it by Europeans. Those seen were the only articles ornamented with carving observed by me from Warrina to Fraser Range except the following smaller objects.

NOSE-STICK, *Kondell*, *Wondarra* (Pl. 15, fig. 2).—Some of these are over ten inches long, and fully three-eighths of an inch in diameter. The ends are usually ornamented with lines winding round them, which are produced by charring with pointed embers.

MESSAGE-STICK, *Unnain*, *Vergu* (Pl. 15, fig. 3).—The hieroglyphics are produced with a pointed ember; or by scratching with a sharply-pointed, hardened piece of wood, pointed bone, or sharply-edged chip of flint, and then rubbing the incisions over with ochre. Very fine lines are produced by the stone-chip, as is shown in the figure.

HAIR-FASTENER, *Talla* (Pl. 15, fig. 4).—Used for fastening the hair when forming the chignon-like knob at the back. From four to six inches long, oval, and pointed on both ends, often curved, and always ornamented with scratches or rings. Generally they are made of Yauwilli (Acacia sp.), but sometimes of bone.

FASTENER, *Balga*, *Dalgerri* (Pl. 15, figs. 5 and 6).—Narrow, notched, and ornamented sticks made of hard wood; used as hair pins, and for boring holes in skins, &c.

HEAD-ORNAMENT, *Yindinga* (Pl. 15, fig. 1).—Made of green, soft-timbered sticks, which are shaved down, and the fine shavings left attached at one end to form a ball at intervals. This ornament is used at dances and corroborries. I have also seen a piece

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of it, broken near one of the balls, used as a brush to paint with.

FOOD- OR WATER-BOWL, *Yari*.—Large, made of wood.

FOOD- OR WATER-BOWL, *Moya* (Pl. 16).—This is made of thin mallee bark, which is gathered up at the ends and tied with bast. To accomplish this, I think the bark requires sweating in order to make it pliable, as the green bark is rather brittle, and would surely crack if the bending of it were attempted without some preparation.

ETCHINGS, *Worma* (Pl. 16).—These etchings on the inside of thin mallee bark are made with a hard sharp stick (*Dalgerri*) when the bark is green. The air discolors the scratchings, which become yet more visible through the gummy sap accumulating in them, and coagulating into minute globules.

HAIR-TWIST, *Kāda namba*.—This is made of human hair and very strong. Used for tying up the hair and for winding round the body as a belt.

7. MURCHISON DISTRICT TRIBE.

SPEAR, *Kulba*.—A plain thin kind with a single barb.

SPEAR-THROWER, *Mero* (Pl. 14, figs. 3 and 4).—These are of the general style, as found near Fraser Range, but much more carefully made. The underside is convex and smooth, but the upper flat, and generally very neatly carved, and covered with ochre.

BOOMERANG, *Kaili (?)*.—I saw both the smaller curved and larger less-bent kind, but none of those seen were proportionately so well finished as their other weapons.

CHISEL, ? (Pl. 14, fig. 5).—Excellently made as a rule, and regularly corrugated the full length from the handle.

THROWING-STICK, ? (Pl. 14, figs. 6 and 7).—These are always always made of very carefully-selected wood that will never show the smallest rupture afterwards. They are notched at the handle and either smooth or fluted.

? ? (Pl. 14, fig. 8).—The use of this peculiar implement I am unable to give. It is nearly two feet six inches long, rather thin, convex at the back, and flattish on the carved side. Originally it may have been intended for a Yilbar (although of extraordinary size), but was left unfinished for some reason, as it has not the necessary hole. For a weapon it is too light. The carving is scarcely as good as is generally found on other implements.

BULL-ROARER, *Yilbar*, *Kundain* (Pl. 17)—The series of these vary from 10 to 29 inches in length, and from one and seven-eighth to three inches in width. All are more or less convex at the back and flat in front, elliptical, with a blunt edge all round. Each of them is carved in front with a different design, varying in accuracy of execution. The longest specimen is an abnormal

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type, and, besides, is made of the least carefully selected wood in this series, as the flat surface has several wavy depressions. The others are fairly flat, but some slightly twisted. One specimen has been mended with resin-cement at the place marked with a ×. All have been covered with ochre rubbed on in a dry state.

SHIELD, ? (Pl. 18).—It is made of hard wood, two feet three and a half inches long and six and a half inches wide, slightly convex in front, and correspondingly concave at the back. The ends bend backward about one and a half inches, so that a straight line may be drawn from the ends over the back part of the handle; elegantly shaped and worked down to an average thickness of a quarter of an inch, which is gradually increased towards the handle, but slightly thinned towards the margin. The front is deeply and regularly grooved, and painted alternately white and red; the back is less regularly and more finely grooved, and colored completely red. The workmanship and finish is superior to anything I have seen produced by the aborigines of Australia, and the pigments must have been applied wet, as they adhere much more firmly to the wood than usual when applied dry. This kind of shield appears to me completely worthless for the purpose for which such an implement is generally intended to be used. Its extreme thinness and lightness, together with the want of tenacity of the wood it is fashioned of, makes it unfit to resist a waddy or a club; a single blow from either would send it into splinters. Even against a spear it cannot be a protection, because a stroke from one, unless it glanced off, would be likely to split it from end to end. It seems to me almost as if it were intended more for an ornament than for use, and if the aborigines obeyed a chief like other crude peoples, I should be inclined to consider it an emblem of authority. These thoughts occurred to me on carefully examining the shield for description, when I noticed that it had suffered considerably since it came into my possession, although I believed it to be packed fairly well, together with some other things.

BONE NOSE-STICK, ? (Pl. 15, fig. 8).

BONE NEEDLE OR AWL, ? (Pl. 15, fig. 7).

DIGGING-STICK, ?

SMALL WOOD FOOD- OR WATER-BOWL. ?

The last two implements are the constant vade mecum of the women. (The names of the objects queried by me I am unable to give owing to a much-regretted loss of a portion of my Murchison vocabulary.)

Besides the absence of boomerangs amongst the natives encountered during the earlier part of the journey, after leaving Warrina, the absence of clubs, shields, and stone tomahawks, which extended beyond the Fraser Range, was very

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noticeable. It is easy enough to account for the latter, because where there are no large trees to climb, and no rivers to cross, and consequently no demand for boats, the tomahawk is an implement not much required, and for the chipping of their weapons and implements, the chisel is probably sufficient. But for the absence of shields and clubs I am at a loss to account, except that these tribes are so extraordinarily peacable that they do not fight at all, or very rarely; or that they do not use the spear to fight with, or ward it off in some other way than with the shield. A number of spears were found hidden under some rocks not far from Camp 15, but shields were not seen there. The blacks whom we surprised at the waterhole between Camps 43 and 44 had no clubs or shields with them, although otherwise fully equipped with the implements of peace and war. None of the roving lots we met ever carried either, and none were seen amongst those from the various districts that were met with near the Fraser Range.

It is not from the want of proper material that these tribes have no shields, because there are sufficient Kurra-jong trees (*Brachychiton Gregorii*) found throughout the country; and regarding tomahawks, there is nowhere lack of material for them.

Gnora is the resin of the Grass-tree (Xanthorrhea) mixed with fine sand and dust, which makes an excellent cement, that is deservedly esteemed by the natives for the purpose of fastening the chips of flint to their cutting tools, and for other things. The setting of these stones is rather a slow process, because the lump of cement used for the purpose requires to be gradually heated through to make it thoroughly plastic. If it is heated too quickly it froths up and crumbles, behaving much like natural asphalt under such conditions.

When a native wishes to fasten the stone, say to a Meru, he begins by warming the wood near the handle, and then attaches a lump of the cement to it, which is slowly warmed through over a few embers and hot ashes. After the stone is inserted into the cement, the warming is further continued, and the soft mass pressed into shape with the fingers; before that, however, it is moved over a small heap of dust and dry earth, scraped together for the purpose, partly to prevent the cement sticking to the fingers, as well as with the object of working more fine particles of earth into it. This manipulation is continued for some time, until after reapeated warmings the stone is well imbedded, when it is allowed to cool. The stone sticks very firmly after that, and rarely comes out till it is removed for the purpose of being replaced by a sharper piece.

The hooks of the meru and the barbs of spears are also set firm with a little gnora, after they have been well tied with the sinews from the tail of a kangaroo or wallaby.

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In the Victoria Desert I found on one occasion a great deal of this cement at the base of some large grass-trees, standing on the ridge of a sand-dune. The trees had been on fire some time before, and the resin had oozed out, and accumulated near the root whilst soft, and when in this condition a deal of sand had been blown on to it, thus forming cement.

At the Fraser Range the blacks were very pleased when I gave them some of this. From the delight shown by these natives at obtaining this cement it appears that the trees must be of rare occurrence in their district, or that they can only obtain the gnora by means of barter from some other tribes.

The Murchison tribes use ochre freely for painting the weapons and implements. Apparently that substance is found abundantly in their district, hence its frequent application. At the Fraser Range I noticed that the natives use their own blood for the coloring of small things, such as Talla, Unain, or the interstices between the balls of the Yindinga, and other ornaments. To obtain the blood they nick their thighs with the sharp edge of a small chip of flint, which makes the blood flow gently, and generally form large beads over the incision. The articles to be colored are rubbed over the wounds on the thigh, and the blood is afterwards more carefully spread with the tip of the finger. As the incisions are not made very deep they soon close up when the blood begins to coagulate, and for this reason it often requires a great number of cuts to color a single article.

It is noteworthy that *red* (the color of blood) and *blood* go by the same name, viz., *yurnin*.

Notes on Various Customs, Ceremonies, &c.

Obtained by information from reliable sources.

From Mr. J. B. Beck, mounted constable at Warrina, who for many years has frequently come in contact with the aborigines of the interior, I obtained the following interesting observations:—

Among the Diyeri tribe at Lake Hope, Cooper's Creek, the following custom prevails:—

Interdum quinque, sex, septemve adolescentes mulierem conducunt; aut "yinka" (funem capillis humanis factum) aut telum aut aliud nescio quid pro soluto dant. Tum in casam, cui nomen "wurley" datur, pæne ducentos a tectis passus ædificatam, mulierem inducunt; deinde sortiti deinceps casam ineunt; postremo egresso, primus redit: hoc usque ad primam lucem facere solent. (A case like this has come under Mr. Beck's own observation.)

To make the swans lay a corroboree is held, during which two

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of the oldest men of the tribe take each a sharp fish-bone and pierce it right through the scrotum. They consider this piece of sorcery specially powerful to induce the swans to lay. (This information Mr. Beck obtained from some of his blackboys, whom he considers perfectly reliable.)

To make rain the following disgusting ceremony or scorcery is performed :—

Plurimi se violare solent; semen in alveum collectum, aqua farreque (cui nomen "nardu" datum) miscent; quod deinde vir quisque edit. (Obtained from Mr. Beck's black boys.)

When they are about to exercise the rite of circumcision, or the "terrible rite," they proceed as follows :—A black lies down on the ground face downward, another lays himself on the first face upwards, and a third upon him again face downward. On these three the young man is thrown, and held by the hands and feet whilst the operation is being performed. (Also by information of the black boys.)

The superstition of pointing a bone to make someone ill and cause his death is believed in by this tribe. All illness is invariably attributed to the illwill of an enemy who has pointed a bone at the victim, whose body it has entered, and is lodged where the pain is felt. If no medicine-man sucks the bone out, death is almost certain to take place. When this happens the relatives of the dead go to the tribe whence the bone is supposed to have come, and slay the imaginary murderer. This, of course, leads to retaliation, and a feud of long duration, or even perpetuity.

The following information was furnished by Billy Weaver, an intelligent half-caste living at Warrina, but who was born at Port Lincoln :—

TERRITORY OF TRIBES.

The territory of the *Andijirigna* extends from Alberga north to Mount Eba south; to the west past the Musgrave Range, and in the east it joins the territory of the

Wungarabunna, which extends north from Oodnadatta to Strangways Springs south; east to Lake Eyre, and west to Cootanoorinna. The

Diyēri extends from Salt Creek north-west of Cooper's Creek to Hergott Springs south; east to Lake Hope, and to the west joins the Wungarabunna territory. The

Kukatha joins the Andijirigna, and extends from Port Augusta north to Poonindie south-west. The

Kuyanni joins the Diyēri, and extends from Hergott Springs north to Beltana south. The district of the

Wonkongnúru lies round Salt Creek, and joins the Diyēri in the north. The

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Gnámeni live to the east of Salt Creek, and join the Wonkongnúru and Diyēri tribes. The

Yandruwuntha territory joins that of the Diyēri tribe at Lake Hope, and goes south as far as Strzelecki. The

Wungaranda joins the Wungarabunna and Andijirigna tribes.

PUDNAPA AND YERUPA.

Circumcision and subincision are practised by the following tribes, viz., Wungarabunna, Diyēri, Kukatha, Wonkongnúru, Gnámēni, Yandruwuntha, Kuyanni, Wungaranda, Andijirigna, and the tribes near the Barrier Range, and probably also on the Murray. With all these tribes the Pudnapā and Yérupā is compulsory, and in cases where young fellows have been brought up with whites they have been taken by force for the purpose of having these rites performed upon them.

On the Diamantina lives a tribe that circumcises, but does not subincise. Weaver lived for some time amongst them.

Pudnapā is the name given by the Wungarabunna to the rite of circumcision, and Yérupā to subincision. Both these rites are performed in secret, and with the strictest exclusion of the women. The operation is performed by some old men, chosen for the purpose, with a sharp stone, which is afterwards buried. Any other thing but a sharp stone is considered poisonous. Weaver tells me that he has been present at two of these ceremonies, although the blacks will scarcely consider him one of their own. He is certain that no white man would be allowed to witness these rites under any consideration. The last he witnessed was performed a few years ago not far from Warrina, at the North Creek. A corroboree was kept up for about a week before the operation was performed. During the forenoon the men had their dances, &c., and at night the women also. Previous to the rite, the women were all driven out of the camp. The young man was laid on the ground and his arms and legs held, whilst the old men performed the operation with a sharp stone. This being done, a signal fire was lit to announce that all was over, and then the resumption of the corroboree finished the ceremony. After the incision some opossum hair is placed in the wound, which is then allowed to heal. This process takes some time. The patient is removed out of sight of the women, and has to keep away from the camp until he gets well. Food is procured for him during this time by someone who is told off for the purpose, but who is relieved from time to time.

These ceremonies are called Wilyuru, which signifies the elevation of the youth into manhood, and are generally performed between the 14th and 16th year, and, in cases where the youth may have worked for some white men, at a later age.

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I inquired of Weaver why the blacks observed these rites, but all he could tell me was that by these ceremonies the youth were made men, and without these operations they would not be considered such. He has since made some enquiries of the blacks camping near Warrina, and these give it as their opinion that it is now considered a safeguard against certain diseases, but formerly was done to raise the individual undergoing these rites from youth to manhood.

These answers not being satisfactory, I asked him whether it was not done to prevent over-population? He answered me that all were cut that way, unless brought up by whites, and that the operation did not prevent the impregnation of the female. Expressing my doubts on this, he said that he was quite certain on this point, and that the blacks performed the act of coition in a different manner to the whites.

Hic mihi enarravit quomodo se ponant. Mulier ut videtur, corpus ita ponit ut vir, genibus suppositis, manibus lumbum prehendere possit: unde fit ut genitalia quam proxime conjungantur; eo modo fieri potest ut semen in vaginam introire possit.

"Yérupā" means a slit. The organ of the female is therefore sometimes called by that name, although the proper name for the vagina is pintha.

The names of the sexual organs are as follows:—

	Male.	Female.
In the Wungarabunna ...	Wunthu	Pintha
" Kuyanni	Wurri	Bidlī
" Kukatha } ...	Kāla	Kuna
" Andijirigna } ...		
" Diyēri	Kuni	Kula

The tattooing of the arms, chest, and back, as a rule, is done after the yérupā has been performed; occasionally, however, before it. It is considered a final ornamentation of manhood by most tribes.

The ceremonies called Wilyuru are known by this term amongst the Wungarabunna (Warrina), Kukatha (Port Lincoln), Kayanni (Beltana), Andijirigna (West), and others.

LAWS AND CUSTOMS OF MARRIAGE.

Closely related marriages are prohibited.

Mattari and Karrari are the terms used to distinguish the leading strains of blood. How these are determined I could not get explained, except that they must not marry in the same strain, but Mattari must marry Karrari, and *vicé versâ*.

Marriages, besides taking place in the same tribe, may also be contracted between these two strains of blood with other friendly

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tribes in case one or the other of them should predominate here or there.

Polygamy is permitted, and customary, but a blackfellow has seldom more than two wives.

A married black will sometimes send his wife to his brother who has no wife of his own.

Adultery, which often takes place, if, for instance, some fellows leave the camp for a time, is punished by thrashing the woman, whilst the man goes unpunished. Should a woman be killed by too rough a beating, nothing follows, unless her relatives take it up, and then, perhaps, kill the slayer. However, this occurs rarely.

Women retire from camp if about to give birth to a child, and are attended by other women. For about 10 or 12 days afterwards they keep away from their husbands. During menstruation the women sleep apart from the men, but are not entirely secluded, only coition is prohibited. They wash themselves freely during this time.

A FEW OTHER LAWS.

Tribal boundaries are strictly acknowledged, and if overstepped the act is considered as an aggression.

Property is only personal, and consists of the weapons, tools, and utensils of the individuals. No one has any special right to certain lands, which are all held jointly on account of the tribe, as against another tribe.

The annexation of a weapon or utensil is not considered a crime, but must be compensated for or returned. (It seems to be, therefore, a sort of borrowing without permission from their point of view.)

BURIALS.

The dead are buried in the ground. When a blackfellow dies he is rolled in a blanket, or some other covering, and left stretched out in the wurley till a hole is dug. If the ground is soft the hole is sunk to five or six feet, and even deeper. The body is then placed alongside the hole, and speeches are made over it, wherein his deeds are related and his virtues extolled, which speeches may last perhaps for hours. A great deal of wailing and lamenting is also carried on over the corpse, particularly by the women. After the body is put in the grave green boughs are placed upon it, and the hole filled up to about two feet from the top. In this state the grave is left for about a week or two, and is then filled up with sand. A small mound may be formed, and then trees and bushes are placed lengthways over it, and the place round it is levelled and cleared. For a few weeks the grave is looked after by the women, and sometimes the old

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men may visit it, but after that it is avoided and never passed in the dark. As a rule the body is buried near the place where death occurred if a high and dry spot is convenient. The tribe always shifts camp after a death has taken place, and never bury more than one corpse in the same place.

This custom of burial prevails among the Wungarabunna, Diyēri, and Kuyanni tribes.

NOTES ON VARIOUS SUBJECTS.

In the Wungarabunna dialect the chisel used for making boomerangs and other tools is called Kandru. This is a stout, slightly-curved stick of hard wood about two feet and a half long, to which a sharp stone about an inch wide is attached with cement. It also serves at times for throwing at game, or instead of a waddy, but is mainly used as a tool. The name of the stone is Thula, and the cement for fastening the stone is called Kundi. This is made from the gum of the grass tree (Xanthorrhea), which does not grow nearer to Warria than Cooper's Creek, whence it is obtained by the Wungarabunna in exchange for other articles. The best of it is obtained from old trees near the base of the trunk and from the root. It is extracted by heating these over a slow fire, when the gum oozes out, and afterwards mixed with sand. The Wungarabunna sometimes substitute the gum of the Gidyea (Acacia homalophylla), and since the railway came to Warrina, Stockholm pitch for it; but none is as good as the Kundi.

To cure pain in the stomach the blacks use a shrub called "Pinpa." Green branchlets of it are placed on the embers of a fire till they are well heated through, and so are applied to the abdomen. I could not get a sample of it near Warrina, where it is scarce, but it is said to be abundant near Beltana.

Cyperus rotundus grows fairly abundantly along the sandy borders of creek beds near Warrina, the bulbs of which are much prized as food. The "Yalka," or "Yaua," as these are called by the blacks, are collected when the leaves have died off, by digging them up with the Wadna. They are about the size of the first joint of the little finger, and when roasted in the ashes or on hot stones they have a very pleasant nut-like taste.

A FEW MEANINGS OF NATIVE NAMES.

"Yauatunkinna"—a lake about 15 miles north of Lake Hope—means "stinking of yaua."

"Perrigundi"—a lake about 30* miles north of Lake Hope, and filled by Cooper's Creek—means "beautiful bowl of water."

* The distances may probably not be quite correct, but this is immaterial.

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"Perrichirri"—station at Cooper's Creek—means "pretty little waterhole."

Mr. A. G. Hall, Assistant Resident Engineer at Warrina, gave me the following information:—

A few years ago a native by the name of King killed another blackfellow of the same tribe for committing adultery with his wife.

Another blackfellow of the same tribe killed a white man by hitting him with a boomerang on the forehead for committing adultery with his gin. (Compare above, p. 279, with Weaver's statement about adultery.)

THE YUNGA.

My informant is Wainbret, a native of this tribe, who understands English well, and also speaks it fairly. I met him at the dam-sinkers' camp, near the Fraser range, and was assured by those who knew him well that he was thoroughly reliable.

The Yunga is a costal tribe, the centre of their district being about Esperance Bay. The extent of their territory to the east and west I could not correctly ascertain, but they claim the ground inland to about 40 or 50 miles from the coast.

They are friendly with the neighboring costal tribes, but at feud (or were so) with the Bardoks, whom they despise (according to my informant) on account of their cannibalism.

The tribe was very numerous up to the time the measles broke out among them, which must have been between 20 and 25 years ago, for Wainbret, whom I take to be about 35 years of age, says that this epidemic made fearful havoc amongst them when he was a young man just getting his beard. Since that time the tribe has not increased in numbers again.

The Yungas neither circumcise nor practice subincision; neither do they pierce the septum of the nose, nor knock any of the front teeth out. They are, however, cognisant of these practices existing among the Bardoks.

Polygamy is unlimited amongst them, but the most have only one or two wives, and seldom more than three. A child girl is frequently allotted to her future husband soon after birth, who helps to procure food for her during her infancy. He takes her entirely into his charge as soon as she comes to the age of puberty, which is about her twelfth year, or when her breasts begin to develop. For this reason it often happens that old men have very young wives. The parents generally receive something in exchange for their daughters, some sort of useful article, but also part with them as a free gift, as they rarely object to let the girls go. Should a young man run away with a bespoken girl and they are caught both are killed. This being a well-known and acknowledged law such elopements occur very rarely.

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Wainbret asserts that his tribe never practised cannibalism. This may probably be correct, because there seems to be sufficient food obtainable along the coast; the tribe was also very numerous formerly, which may be considered as favoring this assertion, but I have noticed that the blacks as a rule deny their cannibalistic practices, at any rate to the whites. But he tells me that the Bardoks up to quite recent times indulged in this terrible practice (perhaps they do still although he thinks not), and that the knocking out of a front tooth was done after anyone had partaken of human flesh. The various tribes used to be very fond of eating young fat babies before these began to walk. The men would send the women away from camp to search for food, and during their absence knock the child on the head and eat it. Mr. E. Keenan, one of the dam-sinkers, who has been a great deal among the blacks in various parts of West Australia, corroborates this statement from personal observation, and considers it to be well authenticated by others.

NOTES MADE AT YAURIGABBIE (WATSON'S STATION), W.A.

The informant is a young native, Kuma by name, who speaks English fairly well, having lived at the station since he was a boy.

His native country he calls Yolla, which lies to the east of Yaurigabbie; to the west the country is called Yaburru.

The name of his father was Munga; that of his mother Bulli; and Murdaun, Billaga, and Yanneri are the names of his three brothers.

The father names the children.

Kuma's father had two wives, and states that this number cannot be exceeded by any individual of his tribe, according to their custom. There is no ceremony about the marriage. When a young man is getting a beard, he is informed that he may take a woman. When their breasts begin to swell, the girls are considered marriageable.

The tribe practises circumcision, but not subincision; as, however, my informant has not lived amongst his tribe since he was a boy, the last part of the information may justly be doubted, particularly since he could not give me any information about the manner of burial in his tribe, and the ceremonies in connection therewith, showing that he was not acquainted with all their rites. I cannot believe that this tribe should dispense with the rite of subincision, which is so universally practised in the interior of West, as well as South, Australia, and amongst tribes by whom they are surrounded on all sides.

They do not knock any of their front teeth out.

Kuma's father died at Rottnest Island, whither he had been deported for some offence.

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NOTES MADE AT ANNEAN STATION, MURCHISON DISTRICT, WEST AUSTRALIA.

The blacks of this district are characterised by some of the most depraved habits made known about the aboriginal races of Australia. Cannibalism is practised among them, and perhaps assumed the worst type because it has become such an ingrafted habit with them, that it is indulged in even without the excuse of necessity and starvation. A case related to me by Mr. Cruikshank, the owner of the station, cannot possibly be more horrible, and places the perpetrators in the worst light.

At the present time there are two blacks from Morarie, on the upper Murchison, imprisoned on Rottnest Island for killing and eating a boy of eight or nine years of age. At the time of the occurrence of this dreadful deed, the tribe held a corroboree at Yalga, and were well supplied with food, for beside their native game they had received a sheep and a bag of flour from Mr. Cruikshank. Of this, however, the two fellows did not partake but decoyed the boy away from the camp into the bush, and there killed and ate him. The boy belonged to their own tribe, and the deed does not seem to have been approved of, because the murderers were committed on the evidence of the other natives.

The women of the various tribes inhabiting this district frequently kill their young children to rid themselves of the trouble of rearing them. Not far from Annean Station a woman gave birth to a child whilst out shepherding, which she killed, and at night brought the sheep home as if nothing had happened. On one occasion Mr. Cruikshank asked a woman about her baby which he knew was ill; she replied it was dead. But dead and ill being synonyms in their language he did not believe in the child's death and gave her a blanket to wrap it in. The next morning he found the child dead on the top of a fence and the woman gone. Whether the child had been placed in this position when still alive is doubtful, but the woman had evidently neglected it in order to get rid of it.

I have, however, noticed mothers to be very kind and playful with their children when these were healthy, and when they were sick and seemed to suffer pain place warm ashes on their stomachs and rub and tend them patiently and affectionately. It must not be forgotten that it is the duty of the women to provide food for themselves and the children, and to some extent for the men also, in fact, these appropriate whatever they like of all that is brought in. Under such conditions the children have to take their chance, and it stands to reason that they must often get badly neglected and begin to ail, when they become still more troublesome. Foreseeing this the woman may think it better to kill them immediately after birth, although with them it is not a disgrace to

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become a mother—a frequent cause of infanticide among civilized people.

The fear of over-population (?) seems to preponderate more amongst these tribes than with most of the other Australian natives, for here, besides the peculiar rite they practise in common with them, they remove the nipples of the breasts of many women to prevent them suckling, a practice I have not previously heard of.

It appears almost paradoxical in the face of these statements to assert that women in confinement are carefully tended, but this is not the only contradiction that may be observed in the life and the habits of this peculiar and in many respects incomprehensible race.

When a woman is about to give birth to a child she is taken away from the men, and is attended by another woman, generally an old one, who looks after her for several weeks and finds food for her. During this time of seclusion in a specially erected maimai the men must not come near her.

No special seclusion is observed by the women during the time of their menses.

Polygamy is unlimited, but probably there are no men found with more than three wives. They generally cohabit with one of them for a time, and change to another as fancy moves them. Jealousy does not seem to exist to any great extent in either sex. The blackfellow does not like to see the woman with whom he is cohabiting at the time go astray or interfered with. About his other ones he does not trouble much, and may perhaps lend them out.

A black that worked at the station during my stay had the loan of a woman from another black who had gone away to some distant place, and she absorbed all his affection for the time—in fact, almost beyond the usual custom, for he did not even make her work, and scarcely allowed her to go out hunting. His other two women had to bring the food, supplied to them by the station owners, to their camp at night, where all four would partake of it together in the best of harmony.

All men are circumcised and subincised.

The rite of circumcision is always performed first, at the time when the young man is getting a beard. The other rite is performed about a year after. The length of the incision varies, but it is often the whole length of the organ. The most painful of these operations is the circumcision, but the healing of it is quicker than the other. To stop the bleeding and to assist the healing the down of some emu feathers is placed on the wounds.

These rites are always performed in secret, and no white man, as far as I could ascertain, has ever been allowed to witness

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them. Mr. Cruikshank has given me the following description of the ceremony, obtained by him from one of his old station hands, who confided it to him.

When the operation is about to take place, the individual to undergo it is blindfolded, and three of the oldest men of the tribe are also blindfolded. One of these is then placed back to back with the young man, and, interlocking his arms in those of the victim, lifts his feet off the ground by bending well forward, and balances him on his back. The legs of the young fellow are then lashed back to the legs of the bearer, and in this way safely secured. The other two blindfolded men now approach, and remove the foreskin by means of some sharp chips of flint.

For what reason the three operators are blindfolded is difficult to tell, unless it is done to mystify the one who holds the victim up, that he may not tell for certain who really performed the operation. It may, however, only be a little extra display to lend a more imposing impression to the rite, which, as it is performed with the greatest circumspection, and the one most persistently and universally practised, perhaps some such humbugging ceremonial embellishment is deemed necessary to enhance the mystification of it.

The women, as is well known, are kept strictly away from all these ceremonies under pain of death, and to give them warning to keep away, and shut their eyes, a whirring sound is produced by an instrument that is rapidly rotated through the air. This instrument consists of an oval piece of wood from ten inches to two feet six inches long, and from two to four inches wide. It is flat on the one side, and generally elaborately carved on this, and convex and plain on the other. At one end is a hole for a thong of kangaroo hide or a twisted string of human hair, by which it is attached to a handle (Pl. 17).

The blacks tell the women that "Jinki" (the devil?) is about when they hear this yilbar sounded, and although they often know well enough that the men are carrying on some mysteries, they pretend to believe it, and partly from fear and partly from superstition take care not to inquire into the matter too closely. The women must not even look upon one of the yilbar, for they would certainly be killed if they were found to have seen one. If accidentally a woman should get sight of one, she would probably pine to death, because she has been led to believe that her doom is sealed, and that superstition is so deeply rooted in her that she would most likely succumb to what she thinks is her unavoidable fate. The yilbar is therefore always most carefully wrapped up, and hidden in a secluded place, when not in use.

For several weeks the young man who has been recently operated upon whirls this instrument whenever he thinks some-

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one near, and must not enter the main camp till he is quite healed. He stays during this time at first a good deal in a maimai by himself, covered entirely from view, and is supplied with food, which is not rarely sent by one of the old women of the tribe, who, however, carefully avoids catching sight of him. In such cases she will give a signal of her approach, leave the food a little distance from the hut, and retire quickly, after having given another signal.

How deeply superstition is fastened in the mind of men and women, how eager the first are to keep it alive, and on the other hand how the women are imbued with fear, the following anecdote will illustrate:—

The wall of one of the rooms at the station was decorated with a number of native weapons and implements, and among the latter several yilbars. This was well known by the station blacks, and soon after our arrival "Jack" took Mr. Cruikshank mysteriously aside to say something to him, which turned out to be a request that the new arrivals be warned not to get the yilbars out and show them to the women. A few days later I asked "Jinny," when she was sweeping the verandah, to come into the room, but she would not, although I offered her tobacco, which would make her do almost anything else; and when I went towards her and caught her by the hand, she threw her broom down and ran away. Some time after I told her that I would bring one of the things out and show her, upon which she immediately ran away, hiding her face. She cleaned every other room but the one the implements were in. Both these blacks had lived for several years at the station, and had been a good deal enlightened, and had altered considerably from their original ways, but so far the contact with civilization had not produced the least effect towards removing this superstition.

Marriage ceremonies they have none. The women are obtained in a similar manner as is the custom among other Australian tribes. They are allotted at their birth, or are promised or bartered later.

The burials of this tribe are very simple, and as far as I could ascertain conducted without any special ceremonies. The corpses are put underground in a shallow hole, or perhaps only in a hollow, and then covered with sand and boughs.

In one aspect the character of the natives of the Murchison District differs entirely, as far as I know, from that of most of their compatriots. It is a well-known fact that among many of the Australian tribes veneration for the aged is strongly developed, and as a rule the old people are well treated, respected, and provided with food when they get feeble. This trait excites our admiration, and compares very favorably with

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the prevailing customs among other nations still living in their aboriginal state, as well even with some of those who have entered the pale of civilization and felt its harmonising influence. The manners and customs of most races teach us that they neglect the old people, and in many instances they have been treated cruelly, and have even been buried alive when they became troublesome.

Among the Murchison tribes the veneration of their aged people seems to find no place, for not infrequently they kill them when these get too feeble to procure food for themselves, by hitting them with a waddy across the back of the neck.

If, however, a woman volunteers to procure food for any feeble individual, he is left to her, and spared as long as she likes, or is able to care for him.

At the time of my stay, a case was known in the district where a woman had charge of a feeble man, living together with him apart from the others, and providing for him. But the woman was old too, and it was likely that the man would outlive her, and then would be knocked on the head. I asked the black at the station about this, who told me that the man would likely be killed, but his time had not come yet. The last part of this sentence seems to me to imply the correctness of these statements more than anything else.

It is evident that the fate of being killed only meets the man whose wives have died before him, because as long as he possesses a woman belonging to him, she is under his command, and he can make her work. There seems to me a deep policy underlying the custom of having several wives, and more yet in the practice of getting young ones.

In spite of the bad traits I have had occasion to narrate of this tribe, I cannot say that they have made an unpleasant impression upon me, and although I cannot enumerate many of their virtues, I must say that they make very faithful servants to the whites, when fairly treated. The struggle for existence in the country they inhabit is at all times very hard, and during prolonged periods of drought, which are, unfortunately, of too frequent occurrence, they must be almost continually at starvation point. The occupation by the whites of the better portion of the country makes their existence still more difficult, as it drives the native game away, which cannot live so well when sheep eat their feed up. If under such conditions a starving black is tempted to kill a sheep now and again, it ought not to be looked upon as too severe a crime, particularly when it is considered that he does not regard it perhaps as being so very wrong from his point of view, who, after all, is the rightful owner of the soil, that yielded him game for ages.

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The physique of the Murchison tribes is much superior to that of Fraser Range. Most of the men observed by me were over five feet six inches high, and proportionately muscular. The women are mostly well-shaped, particularly the younger. Both men and women tattoo, the latter generally on the chest, where the scars often form bands from breast to breast. With several men I noticed the front tooth knocked out, but it seems that this custom is not a universal one. I did not notice any of them bestowing much attention upon their hair, of which some possess a profuse growth. Ochre they use freely (and probably also other colors at times) upon their body, and also paint most of their weapons and implements with it.

Venereal diseases have been introduced among them during late years, more especially since the discovery of gold on the Murchison.

NOTES ABOUT THE TRIBES INHABITING THE COSTAL DISTRICT FROM GERALDTON TO ALBANY, AND THOSE OF TERRITORIES NEAREST ADJOINING THEM. Information received from Mr. C. A. Paterson, of Perth :—

Formerly the native population of these districts were very considerable, but through an epidemic of measles that made its appearance among them about 26 years ago, it was reduced to about half its number, which has steadily diminished since. The exact number of the population of these tribes could not easily be ascertained, but scarcely one-tenth of those existing thirty years ago now survive. Diseases and vices not known to them prior to their contact with the whites have told heavily upon them, and seems to enervate them with increasing rapidity; perhaps in another thirty years these aborigines will have disappeared entirely.

None of these tribes either circumcise or practice subincision, and in this respect they differ entirely from the tribes living further inland, but otherwise their customs, habits, and ceremonies are very similar. They also do not knock any of their teeth out, but they pierce their noses and tattoo their bodies with scars both in front and at the back. The painting of the body, particularly for corrobories, is greatly in vogue among them, and they also adorn themselves for these dances in various ways, by putting feathers and fancy articles made of sticks in their hair. Cannibalism has never been practised by them as far as is known.

They believe in, and possess a pronounced reverence for an Almighty being, whom they call Mamma guārra, the father of all. An evil spirit or terrifying agent they fear in Jinki.

The names of the tribes are those of their habitats, that is to

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say, they name themselves as coming from this or that ground; but all have personal names.

The tattoo scars are produced by incisions made with the sharp edge of a stone. Emu feathers are placed in the wounds, and the flesh allowed to grow over them. When these become very painful and gathers, as is often the case, a medicine man is called into requisition to suck the feathers out. In this he generally succeeds, and is then called very clever. In fact, Bal Bolyera Kabulyera (He medicine man very clever) is a standing phrase to encourage the suffering, when in such cases, the sucking of the diseased part, or some professed charm, produces the cure.

Formerly the natives used to go to a great deal of trouble to build extensive weirs to catch fish near Peil's Inlet. Here the Murray and Serpentine join; the first, coming from a northerly direction, is a confined watercourse, but the Serpentine, coming from south-west, passes through a number of swamps and lake-like expansions. Particularly in the Serpentine they used to build these weirs, called Mungo by them, where the water narrowed again after passing through the expansions. These Mungos were very carefully constructed of long fine sticks of spearwood (a kind of titree) laid at the bottom as smooth as a carpet, and ending in narrow openings. Near these the blacks would watch, catching the fish as they were coming over the smooth sticks, and nick them at the back of the head with their teeth before flinging them on to the land. Or a net would be set at the end below the narrows. Sometimes very large catches were made this way, particularly at the beginning of the winter, when, with the increased rains, the fish returned from the spawning places up stream. At this time the blacks would watch day and night for the fish to come, relieving each other.

In the season when the fish were plentiful the natives from all districts used to come to these places and have great feasts and corroborees, and at the same time exchange weapons and implements; those from more inland bringing Kailis (boomerangs) to exchange for the spears of the coast tribes, the woods of the various districts being respectively more suitable for these weapons.

At these meetings the "Babin" ceremony, which is "making friends," was often gone through. The man who wished to make friends with the entertaining tribe would enter the assemblage quietly and seat himself across the thighs of the oldest man, who was probably the most influential among them, or a kind of chief, clasping his hands together round the loins, and touch the belly with his. Near the friend-seeker his wives, and perhaps sons, may be seated, and some others may be sitting round, but all appear unconcerned in the proceedings. Such apparent indiffer-

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ence is one of the traits of a black's character. After a little while the following song is chanted, in which all assembled join :—

Bibba (breast) win wino (?)
Gnalyora (anus) win wino,
Yiri (semen),
Binnana (?),
Gumbulba (urine).
Gnara (?) yaul yauilo (?),
Gumbu (urine) yaul yauilo,
Matta (leg) ward wardu (?),
Yinna (foot) ward wardu,
Urr ! ! Urr ! ! Urr ! !

The finish of this song is an emphatic grunt-like exclamation, which is generally the finish of most of the songs in use at all their corroborees. The translation of the words that are queried could not be obtained by Mr. Paterson, although he tried several times to do so. The meaning of the song is, however, not difficult to understand ; all the parts mentioned have become one in both as a pledge of friendship.

In many of their songs words are made more expressive and phonetic by affixes or abbreviations. In this instance, Gumbulba for Gumbu.

WILD-MAN CORROBOREE.

The preparation for this remarkable corroboree often requires a whole fortnight, and is done in the most secret manner. None of the old men or any of the women are supposed to see those engaged in the preparation during this time, and should a woman accidentally or designedly come amongst them, she is ravished by all the men in the most unmerciful manner. The get up for this corroboree consists of a complete enclosure of the body in small branches and twigs, so that not a single portion of any of the limbs remains visible, and even their form is hidden. To accomplish this the blackfellows use a large quantity of chuat (string made of human or opossum hair), which is wound round the head and body in all directions, behind which the twigs are pushed, and carefully arranged, so that the string is completely concealed.

Like every other masquerade, these corroborees aim at giving surprise, and exciting admiration, and as the blacks are very vain, and ambitious not to be outdone, they bestow the greatest care upon these decorations, that they may be spoken of for a long time. The dance and show last only from ten to fifteen minutes, and then the covering comes down, that has taken probably as many days of mysterious preparation, and is entirely discarded.

PUNISHMENT FOR ADULTERY.

Although sexual connection is freely indulged in when permitted by the owner of the woman, clandestine intercourse is

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punished with death, but sometimes another painful punishment is inflicted. This is as follows:—

The man accused of adultery or elopement is brought to the camp, and condemned to be gidjied. He sits silently on the ground, with his legs stretched out in front of him, whilst his offence is being discussed by the offended and the old men. When the decision has been arrived at, the offended man takes a spear, and drives this through the culprit's thigh, and pins it to the ground. This is to signify that he has been served the same way as he has offended; inasmuch as he has pierced the offended man's flesh (that of his woman, which is his property), so his flesh is pierced.

LANGUAGE.

The language of all the coastal blacks is very expressive and descriptive, although as a whole very simple. In many ways the words are modulated by affixes and prefixes, and abbreviations are in common use. Many of the names of animals, particularly of birds, are adapted from the natural sounds these produce. (These remarks may be justly applied in a greater or lesser degree to all the dialects of the Australian races.)

NOTES REFERRING TO THE KIMBERLEY NATIVES. Supplied by Mr. W. Paterson:—

"The natives of this district eat a certain kind of fruit that ripens about Christmas, swallowing the stone it contains with it, and repeatedly resorting to the same spot, deposit their voidings, generally close to their camping-place. When returning after some time to the locality they pick the stones from out of the excrement, and after cracking them eat the kernel.*

"All circumcise and slit the urethra, which operations are generally performed at the age of 16 or 17. I never saw any that were not slit completely down.†

* During our trip great numbers of Quandong stones (*Santalum acuminatum*), either dispersed or in small patches, were frequently observed in the neighbourhood of waterholes. At first it was generally believed that these were brought there by the natives, who, it was supposed, had eaten the flesh of the fruit and discarded the stones. But later on I discovered that they were voided by emus, which habitually visit the waters, and no doubt during droughts often come from great distances. The kernels of these nuts are edible, and may probably be eaten by the natives when found in this rather objectionable state during times of severity. May not the kernels which Mr. Paterson speaks about have been voided by emus instead of by men?

† Evidently the terrible rite does not prevent impregnation, although it must help to avoid it. The statement that all have to submit to it corresponds with that of Billy Weaver (*vide* supra), and also with my own observation. The assertion made by some writers that certain individuals are left exempt from it for the purpose of propagating the race must, therefore, be relegated to the domain of the fabulous.

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"They knock both front teeth out, and mark their body with tattoo scars.

"The dead are buried in trees, and later on the marrow is abstracted from the bones and eaten. The men eat that of their wives, or *vice versa*, the women that of their husbands, according to who may die first; but at any rate, it seems to be that the privilege of eating the marrow is left to the nearest relations.

"The mothers carry their dead children about with them for some time after death, having wrapped them in a sheath of bark from the paper-bark tree. The flesh soon dries in this way. The corpse is also frequently hung in a tree with this covering about it, and later on the bones are cracked and the marrow eaten. (Whether the marrow was simply considered good food, or whether there was a superstition attached to this gruesome practice, my informant could not state.)

"To protect themselves against the aggressions of the swarms of mosquitoes that appear in many places during the whole of the year the natives construct an oven-shaped sleeping place of clay. To form the dome they pile a heap of bushes together, which they cover with mud just thick enough to stand by itself, and when dry, pull the bushes out of the hole left for the purpose of entering the structure. This opening is just large enough to allow a man to squeeze in, and is closed by a tussock of spinifex pulled into it from outside, so that it jams in tight. Such almost airtight dormitory is often occupied by the whole family during the night, when the heat must become terribly stifling, only to be endured by blacks.

"Paene omnes Kimberleiani Septemtrionalesque pueros habent quibuscum stupra faciunt. Pueri ad libidinem incitati penem in incisuras eorum ponunt. Qua licentia multo magis quam voluptate sexuali se frui illi affirmant.

Extracts from My Diary.

4th June, 1891 (Near Everard Range).—Towards night a blackfellow came to our camp. He made a fire a little distance away when he was signalled to sit down. For this purpose he had brought his piece of lighted bark. On our approach he gave us to understand that he had killed a kangaroo, showing us where it had scratched him on the arm. He was quite naked and of fine physique, with plenty of tattoo scars about the upper arms and chest. We gave him something to eat and some tea, but he did not eat much, being evidently too full of kangaroo. After receiving some presents and clothes he departed, but from his signs it appears that he will come back and bring some more blacks with him.

5th June.—The black returned this morning accompanied by a

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younger one, who is either his son or younger brother. We endeavoured to get information out of them, but failed to do so on account of want of knowledge of their language. The younger fellow left again during the afternoon.

6*th June.*—I gave the blackfellow a piece of a mirror, which caused great fun. He had evidently not seen anything like it before, and looked into it very sedately and with surprise, viewing himself from different sides, and ultimately looked at the back of it, like a monkey would do.

7*th June.*—Three more blacks made their appearance at the camp this morning, who, as well as our former friend, followed us all day, and now camp near by. The three newcomers are young fellows of fine physique, and probably from 18 to 20 years old. Two of these, like the old one, had the right front incisor knocked out. They are all circumcised and have tattoo scars on breast and back. One of them has fresh scars on his chest, which are not yet quite healed up. A dingo came near the camp and was nearly shot by Mr. Streich, but one of the young blacks pointed his finger to his chest, said "puringa" and looked rather excited; this was acknowledged, and saved the animal's life. The dingo allows himself to be handled quite freely by the blacks, but will not allow the whites to come near him. During the day we met a number of native camps.

8*th June.*—The blacks had gathered some native tobacco plants which they call "okiri." They use it for chewing or rather sucking, placing it on the lower lip after preparation, which is as follows:—They rake the cinders of the fire aside, and spread the green leaves on the heated sand until they are nearly dry; after that, the leaves are rolled into little balls, which they knead with the teeth, the spittle sticking the leaves together. When thus made up and rolled between the hands into a cylindrical roll of nearly the size of a thumb, they are dried again, and kept for use. Nearly the whole day long I noticed the blacks carrying a roll on the lower lip, which during meals was placed behind the ear. The juice of the tobacco stains their lips and corners of the mouth, but this is easily removed. On our way one of the young blacks dug out one of the banded ant-eaters (*Myrmecobius fasciatus*) with his yam-stick and "Wera," in a remarkably short space of time, although it necessitated the removal of nearly a square yard of sand before the end of the burrow was reached. They also occasionally dug at the roots of some Mulga trees, and extracted from them the larva of some Cossid moth, which they called "mako." This is eaten alive and much relished. . . Number of enclosures of old bush fences, formerly used by the natives for trapping game, were met with during the day in several places. The blacks keep a fire on each

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side of them when lying down to sleep. It made quite a picturesque sight when the four blacks after dark went in search of firewood, each with a burning faggot of grass in his hand, moving backward and forward amongst the bushes.

9th June.—Seeing the blacks digging away at some roots I stopped and watched their proceedings. They were after some ants and worked away with their yam-stick at the root of a small decayed Mulga, that showed the grooves of the insect. After loosening the soil with the yam-stick, they removed it with the "wera" that acts like a scoop. The pregnant female they were looking for was nearly at the bottom of the tap root, a few feet below the surface. She has a cyst of nearly half-an-inch in diameter on the abdomen, which is filled with a semitransparent yellowish fluid; it is called "mamma ilka" by them, and much enjoyed when sucked. . . . There is a rock-shelter near the camp that is probably often frequented by blacks as the paintings on the rock and the ashes and charcoal-remains of recent fires seem to prove. At the base of the small granite range, about two and a-half miles from the soak, are two native wells close to one another, filled with fine clear water. On the flat faces of the diorite dyke at the top of the range several very regularly shaped circles were found scratched into the rocks.

13th June.—Billy (the first black who came to us near the Everard Range and followed us ever since) had tracked an emu and came in with three eggs. We had one of the two he gave us for supper between the two of us, but Billy ate his, which was a very large one, after an *entré* of an iguana about 18 inches long, followed by an opossum for second course. All these victuals were cooked in the hot sand and tasted delicious, which no doubt induced Billy to cook a second iguana at once and another opossum afterwards. An emu egg, two iguanas and two opossums, besides some tea and bread, I think is a fair record of a black's appetite. We had only a little of one of the iguanas each to try it, and a leg of one of the opossums, and I must confess that the blacks' way of cooking is the most excellent method of retaining the flavour and juice. The opossums were plucked like a bird, which is the general way of removing the fur of the game, and then baked in their skin after the entrails had been removed through a small incision that was afterwards stopped up with grass. The iguanas were cooked without any preparation. After cooking, the skin peels off easily and the flesh looks delicately white, juicy, smoking and savoury.

15th June.—The rocks we had seen to the east proved to be a sandstone ridge running nearly north and south, with an escarpment looking west. Here in a low rock-shelter some native drawings were found, but on the face of an escarpment running

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parallel with the most easterly one, and about a chain and a-half further to the east of it, I discovered a fine series of rock paintings. I copied them carefully, as they are the best met with so far. In front of the painted escarpment the ground is flat, with a very moderate rise in a northerly direction, extending thence for about five hundred yards, where it meets an almost vertical face of rock some twenty feet high. From here the ridge bifurcated through a fault in the formation, and in this way these parallel escarpments near the southern end of the ridge had been formed. The protected area thus formed makes an admirable camping ground. There was a rock-hole containing water at the the southernmost end of the western branch of the ridge opposite the rock paintings. This hole has evidently often been visited by aborigines for the purpose of grinding food or making implements, because a number of depressions were seen round it in the fine but hard sandstone, which were no doubt caused by friction of the hand.

16*th June.*—Reached the salt lake, which Billy called "punn-dee." In several places over the surface of this dry lake, holes had been dug by natives, evidently for the purpose of obtaining gypsum, of which a layer of large and small crystallised pieces was found a few inches below the surface.

18*th June.*—Some blackfellows' camps lately occupied were seen close to the hill.

21*st June.*—I went to the hill two miles north of the camp. This is an almost solid mass of granite with rocks scattered about it, and occasionally eroded layers, that have formed rock-shelters. In one of these I found a recently extinguished fire, proving its recent occupation by a native.

22*nd June.*—We saw several newly made traps for game as we rode round some of the granite hills. These traps consist of a hole in the ground cut down about five feet perpendicularly and fifteen inches by two feet six inches wide. They are sufficiently covered by brushwood to hide the excavation. From each side of this a slightly curved brushwood fence extends to about thirty or forty feet, so that an almost right angle is formed at the hole. In front of the hole a stone about ten inches long and three to four inches thick is placed, and from point to point of the brush fences are laid a couple of pieces of wood. The stone seems so placed either to divert the attention of the game away from the hole, or to induce them to hop over it and plunge into the trap, whilst the wood laid across the fences will prevent their jumping sideways at that point when driven to it. Very likely these traps are self-acting and used by driving the game into them; in any case the animals would keep along the fences and be sure to get caught in a hole at the apex. Several old wurlies and fences had

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been met with before, and at a rock-shelter near a waterhole I saw some rock paintings, which I sketched. They are simple, but show a great freedom of hand; particularly some rings inside each other made with red ochre, which are very accurately executed. These indications lead to the conjecture that the place is frequently visited by natives.

23rd June.—Soon after daybreak a blackfellow approached the camp, announcing himself by lighting some spinifex tussocks as he was coming along. He is an old man and very timid, and like the other blacks, had the right central incisor knocked out, was circumcised and had many tattoo scars on his chest. . . . Our blackfellow did not follow us from camp. Evidently he did not wish to cross the boundary of his country. He said "whitefellow! whitefellow!," pointing towards the west, and seemed frightened. He meant to say that there were blackfellows over there, for it dawned upon us that he had confounded the terms, and called us blackfellows and himself whitefellow.

25th June (Camp 9).—The doctor brought the copy of a painting of a wheel, and was of opinion that some large limbs that had recently been cut from a gum tree and some pieces of bark for water vessels had been cut with an iron tomahawk. If this supposition is correct, the blacks must at some time or other have been in contact with white men, or found the cutting tool, whatever it may be, at some former explorer's camp and brought it a long distance.

26th June (Camp 12).—Soon after breakfast six blacks came to our camp; three of them young fellows who evidently had only recently undergone the ceremony of circumcision. One of them, a very young man, was particularly short but of firmly knit physique. The older ones had their right central incisors knocked out, but not so the young ones. It seems, therefore, that this ceremony is only performed at a later age (perhaps when they are about to get a wife?). They all had scars about the chest and most of them about the arms also. The doctor photographed them in a group, also measured and examined them. He tells me that all have the urethra slit, like those of the Everard Range tribe. They seem to belong to a different tribe and are not of such good physique as those met before, but fairly proportionately built. Their language may be probably also different, but they understood and use the word "papi," and other words in use by the Everard Range tribe.

1st July (Camp 13).—I found a small rockhole with water in a very secluded place and not easy to approach. The blacks had marked the place about a chain below it by some white circles, one of which was exactly like the well-known "Plimsol Mark" on ships, only that the central bar was vertical.

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3rd July (Camp 14).—Messrs. Lindsay and Streich returned to camp just after tea time and brought a blackfellow with them. They had met a number of them about seven or eight miles away, near a soakage; they at first ran away at the approach of the camels, but afterwards made friends by twisting a piece of a "walputti" tail into Mr. Lindsay's beard and the tip of a cat's tail *(undoubtedly a feline)* into that of Mr. Streich's. They were very pleased when Mr. Streich gave them tobacco, handing some of it to the old men first, who, when he also offered some to the younger, tried to interfere and called them "jimba," just as if these were not entitled to such privilege. The one brought to camp has his right front tooth knocked out, is circumcised, and has scars on the chest and back. He calls water "kapi," and fire "waru," which means hot in the Everard Range dialect.

4th July (Camp 15).—We met nine blacks at this place, one of them having been among the six that came into Camp 12. They are not nearly such a well shaped lot as those about the Everard Range. One of them, a middle aged man, is quite a puny individual. Their beard is rather peculiar and not very strongly developed, thin on the cheeks and elongated from the chin. All are circumcised and have the uretha slit like those of the Everard Range tribe.

5th July.—Two more blacks came to the camp who looked much stronger than those already here before them; one of these is particularly a well made fellow and in good condition. All the blacks have a tooth knocked out, but some of them the left central incisor. Those previously observed had always the right one knocked out. They also, like some of those met before, mat their hair together with a sort of wet clay, forming it into rounded clots that resemble those in a dirty cow tail. The most of them wear their hair tied together, forming it into a thick knob, and at times into a tail-like appendage up to 10 inches long. Some of the older had the front part of their hair on the top of the head cut short (probably by singeing) and red ochre rubbed over this part and the forehead. The most of them were painted to some extent, with red on their chests and had black bands on the forehead, and all had more or less tattoo scars on the chest, arm, and back.

6th July.—After tea we went over to the blacks' camp, and had some fun with them. They have a row of fires and lie between two of them during the night. A revolver-shot frightened them very much and made them crouch. Their mimicking and the facility with which they reproduce sounds is astonishing. We sang "God save the Queen" for them, to induce them to chime in, which they did at times. Our limbs were much admired by them, particularly the stout calves of some of us. Much merri-

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ment was also created over the drawing of various tracks of birds and animals on the sand.

7th July (Camp 16).—There were ten or eleven blacks camping close to the hill when I returned. Only two of these had been at our previous camp. One young lad is neither yet circumcised, nor has he a front tooth knocked out, and is perhaps the most interesting figure amongst them. He is well-shaped, looks intelligent, and has altogether a pleasing face. I got a few names of things from them, but they soon intimated to me that they wished to sleep; I therefore left, after again wounding myself with a penknife for the purpose of obtaining the name for blood, in which I succeeded this time.

9th July (Camp 17)—The blacks had a little corroboree, singing a simple tune and clapping their hands in time to the hop; but they soon gave over, perhaps not feeling in too good a humour on account of their empty stomachs. I noticed that one had his beard bound together with a string and formed into a pointed queue.

14th July (Camp 21).—About six miles from camp we passed close to a low range and met with a number of natives who were evidently known by the two that followed us. They were of different age; one of them was getting grey, and the youngest just showed the beginning of a moustache. This one appeared to be of a light colour with very light hair, but on close examination I found the colours entirely due to a grey pigment (mud?) with which he had besmeared himself all over; the light brown colour of his hair was probably caused by the bleaching of it. All the others were painted with red ochre, and two had regular designs on the chest. A band two inches wide ran from each of the shoulders downward across the breast bone converging just above the pit of the stomach, and from this point the band ran straight down over the belly. The one had also a white band of nearly an inch wide along both sides of the red band that set the design off to advantage. They all wore their hair in different styles; some loose, some tied up in front and loose behind, and others had it tied up altogether, and with a roll of grass bent in in some cases. Everyone was circumcised, had one of their front teeth knocked out and the nose pierced; probably all had the urethra slit. . . At night the blacks amused themselves with a little corroboree, which attracted us over to them. After that they amused themselves and us by making all kinds of tracks on the sand, at which some are very smart. During this procedure four more blacks arrived, who yelled terribly when they came near the camp. This was evidently done to announce their friendly intentions, and those in camp promptly replied, and told us that the newcomers were "jimba." This word must, there-

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fore, either mean friend or is the name of a friendly tribe or family. I could not get at the correct meaning of it.

20*th July* (Camp 27, Skirmish Hill).—The doctor and Mr. Lindsay yesterday met an old black and his wife, who were greatly excited at the sight of them and the camels. They seemed to belong to a different tribe, but knew the word "kapi." Besides several pieces of game in their possession they had collected a good deal of "Kurrajong" seed, which they had roasted for food. These roasted seeds have a very pleasant nut-like taste.

24*th July*.—Near the waterhole I noticed two skulls of dingoes and some bones, broken and whole, of the same animal, which prove that these animals were eaten by the blacks.

5*th August* (Camp 33, Barrow Range).—This afternoon nine natives came to the rockhole to have a drink and afterwards delivered a harangue from the rocks, which I translated to mean that they objected to our stopping there and drinking up all the water.

6*th August*.—Messrs. Lindsay and Streich went over to some rocks about half-a-mile to the north, where some natives had been seen and found six of them there. They would not give any information about water and behaved very excitedly, probably to protest against their supply of water and game being appropriated by us. A good number of rock-wallabies were found about the hills close to the camp, and flocks of parrots and pigeons came regularly mornings and evenings to the water. A great many depressions ground on to the flat rocks near it, and a number of grindstones, indicated that this place was a much frequented camping-place of the aborigines.

28*th August* (Camp 35, near Mount Squires).—During the forenoon eight blacks came near the camp, and after prolonged inducements they allowed themselves to be approached. They were, with one exception, all tall fellows and of good physique. One in particular, a young fellow, was well shaped and quite six feet high. The smallest was about five feet four inches, and the others between five feet seven to five feet eight inches. All of them had their faces more or lest painted with white pipeclay, in some instances having rubbed it all over. The markings on the chest and belly, made with the same stuff, were in some cases of a symmetrical design that set their figures off to advantage.

29*th August*.—The blacks came back this forenoon and received a large parcel of salt meat. There were ten of them this time, but they were still very shy and made off with the meat almost as soon as they had taken possession of it. However, they expressed their satisfaction with the present received, after they had retired about a hundred to a hundred and fifty yards. They lifted both their hands above their heads and stretching

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their legs, with the feet over a yard apart, jumped three or four times to the right and then the same number of times in the opposite direction, jumping in unison and with each jump giving a shout of joy that sounded like "hau." This they repeated three times, at intervals of a few minutes, whilst retiring, but each time turning round to face us; the tallest of them holding the bag with the meat outstretched over the head at full arms' length. All had one of the central incisors knocked out, were circumcised, and had tattoo scars on chest, back, or arms. Whether they were otherwise mutilated I could not ascertain, because they would hardly allow themselves to be touched. I did not notice the yellow stain on the lips and mouth caused by the use of tobacco, and it may, therefore, not be known to them, although the conditions about the soakages seem to be favorable for a luxuriant growth of the plant.

3rd September (Camp 40, Victoria Desert).—We came to camp at about 2 p.m., having just before caught a little native girl of about five to six years of age. She screamed terribly when she saw us approach. The poor little thing trembled in all her limbs, when we got hold of her, and she handed us immediately the large lizard she had in her hand. When the caravan came up she received some water, of which she drank greedily, became pacified after that, and ate some of the sugar given to her. Later she got some jam, and at times was incited to a smile, but she submitted more passively than otherwise to our treatment of her. Everyone tried to be kind to her, and I got one of my little mirrors out, but the reflection of her face (which with adult individuals who have never seen this phenomenon before is generally an amusing study to the observer) had no effect upon her—at least she did not display any surprise. She was, however, much interested in the regular impression from the nails of a new pair of boots one of our party was wearing. Apparently, the almost instinctive intuition of tracking was already highly developed in her, and tracks so foreign to her previous observations excited her interest. She understood the word "kapi," and pointed in a certain direction, and later in the afternoon took Messrs. Lindsay and Wells straight to a rockhole about three miles away. On returning from this water they met seven blacks, who appeared to have threatened them at first, but who, after the child was restored and received with a good deal of demonstration on their part, were quite friendly, and accepted presents from our party. I was informed that they came out of the mulga scrub only in pairs at a time, which seems to prove them to have been frightened rather than aggressive.

4th September.—Before breaking up camp this forenoon we went over to the water pointed out by the little girl yesterday.

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It is found in a cavity on a sandstone ridge overlain by conglomerate. About 30 bucketfuls of muddy water were obtained, but a good deal of sand had to be removed for the purpose of raising that much, and at last the drainage ceased. At the southern end of the ridge, numbers of caves occur in the escarpment of the rock, which have frequently given shelter to the natives, who left some traces behind in the shape of extinct fires, bones, &c. There were, however, no paintings in these caves.

7th September (Camp 44, Victoria Desert).—About 9 o'clock a.m. we came to the waterhole found by Mr. Wells on his flying trip. There are, in fact, three waterholes in a stratum of conglomerate, two of which still contained some water, but not nearly 300 gallons as reported. It took a great deal of trouble to obtain 30 bucketsful, which only makes about 90 gallons. Either of these holes, if quite full, would scarcely hold more than 400 gallons, but when found they were half full of debris and sticks. There were eleven blacks, some of them women and children, at the hole, whom we surprised, as they had not heard the approach of the soft tread of the camels. As soon, however, as they perceived us they all ran away, screaming dreadfully, particularly the young ones, who could not follow fast enough to keep up with the men. It took a great deal of coaxing to induce the men to return. When they ultimately did so, they came very cautiously and brought two tins, which they had evidently found in Well's former camp close by. It seemed as if they were afraid of being punished for taking them. All got a present of a bright-colored handkerchief, but this did not allay their timidity sufficiently to enable us to obtain any information from them. They understood the word "kapi," were circumcised, had a tooth knocked out, and had more or less scars on the chest or arm and some had them also on the back. Nearly all were more or less painted with ochre and some had symmetrical designs on the front of the body made with pipe-clay. One of them was a cripple, having lost half the right foot, which was twisted, the heel being in front. On the left foot also some toes were wanting and besides that his left eye was gone completely. However, he could run very well in spite of his defective feet. The others were of good physique, but rather thin, not to say emaciated. Their height varied considerably; I would say from 5 feet 2 inches to nearly 6 feet. One of them (the tallest) was a fine built young fellow, who, from the design on his chest and the number of pieces of dingo tails, twisted in his hair, that were drooping over the back of his neck, had the appearance of being a chief or a leading person in the tribe. One individual had a number of twists made of a light-colored fur, about 2½ inches ong, attached to the hair of the genitals, that hung down like a

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fringe. Their weapons consisted of spears and merus, the same as those previously seen, but the stone at the end of the latter seemed to be inferior (not made of flint, chalcedony, or chert), and the short, carved stick was also similar to those seen previously. A number of large water-bowls were left by them near the waterholes; some of these were made of the thick bark of the Desert-gum, taken from the bent part of a tree, so that they were naturally shaped, the others were carved out of wood. There was also a circular pad left behind made of twisted fur string, that is evidently used for carrying these water-bowls on top of the head. Similarly shaped pads made of coarse grass I had noticed near Camp 33. These were seemingly only made for temporary use, and discarded afterwards.

3rd October, 1891 (Fraser Range).—There were a number of natives of both sexes near the station, some of the women with small children at their breasts, which the doctor photographed. The race here is a very poor and miserable representation of the human stock, owing no doubt mainly to the scanty food supply in this barren country. The average height of the adults is scarcely more than 5 ft. 3 in. to 5 ft. 4 in. and their whole appearance terribly starvation-stricken. Their limbs are almost fleshless and some of the women's thighs not thicker than a man's arm. The men are all circumcised and according to information all subincised, but they have none of the front teeth knocked out. They wear their hair either loose or tied up in a manner somewhat similar to the other tribes previously met with. The women carry the children, when they are strong enough to hold on, in a peculiar fashion, by resting them straddle-leg on the hip with one arm round their body. The child has to hold on with its legs and loops one arm through that of its mother. One of the women carried a child on a piece of Eucalyptus-bark, the edges of which were curled up through drying. When the children are born they are rolled in ashes to dry them, and are then put into such a bark cradle, in which they are carried until they are sufficiently strong to be placed on the hip as just described. The suckling of the children seems to be continued for several years; one youngster I saw, who could already run very well, that stood in front of his sitting mother whilst sucking. A man who was scarcely more than 26 years old had a wife that seemed more than 60; she looked fully that age, and was the ugliest old hag I ever set eyes upon. What a marked difference a regular supply of food makes upon their appearance was strikingly demonstrated by the couple who live constantly at the station. They were in good condition, and their skin looked clean and glossy in contrast with that of the others, which was scabby or rough, and quite dull in appearance. The keeper at the station informed

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me that the natives of that district rely to some extent for their flesh food supply upon domesticated cats, which are plentifully found there in a feral state. (These must have come originally from the inhabited parts of Western Australia, and consequently have spread several hundred miles, having probably followed the small lizards and birds they live upon.) Other flesh food of the natives consists mainly of lizards and ant-eggs (pupæ), as these are found almost everywhere; grass and other seeds form the principal vegetable food. Kangaroos are very scarce, and other marsupials almost absent; emus are also very scarce.

5th October, 1891.—The morning was very windy, and the afternoon boisterous; a smart shower of rain fell. The two blacks fixed up a wurley, and towards evening the woman belonging to the one with the very flat nose arrived with a boy about five years old. The youngster looks fairly well fed, but has a very dilated stomach, which spoils his otherwise fine shape. The woman, however, has a most wretched appearance, although not badly shaped as far as legs and arms are concerned and taller than any of the others I have seen near the station. She is decidedly badly fed, showing the bones plainly through the skin, particularly about the ribs; she has no flesh, and between the clavicle and shoulder-bone a deep hollow is visible. Her distended abdomen, much wrinkled as the result of child-bearing, is covered with some flesh-red streaks, previously seen on several natives, which seems to be a skin disease—(I have since been told that these red marks are the result of burns from the lighted bark they always carry)—and which extend up to the breasts that hang down flabbily and much wrinkled. Her face is also already getting wrinkled, although she is scarcely more than 25 years old; whilst her eyes are bleared by the smoke of the camp fires. How the natives retain the keenness of sight they are undoubtedly possessed of is a wonder to me, considering that they constantly indulge in sitting between smoke fires when in camp. There was scarcely one of them I met whose eyes were not running, and the moisture which trickles down their cheeks is never wiped away, no discomfort evidently being felt. This tribe is certainly the most abject of all the natives of Australia I have ever seen, even more wretched in appearance than the remnants of the Yarra Yarra tribe that could still be seen 25 years ago in the neighborhood of Melbourne. The one with the flat nose accompanied the black who was sent from the station to lead us to this rockhole. His nose is the flattest imaginable; it dilates just above the lip to nearly an inch and a half and looks almost as if it had no bone in it, but the septum is pierced to receive a "kondel." He is a native of Hampton Plain, has the right central incisor knocked out (the natives of the Fraser Range do

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not knock the teeth out, as already stated), is circumcised, and subincised.

7th October.—When I got up this morning I found the native woman on her knees engaged in pounding some mallee roots. These were perfectly dry and were lying on the hollow side of a thick piece of bark that served as a base for the operations of pounding. I could not help admiring the dexterity with which this was performed. Taking a handful of short pieces, she pressed them firmly down on the bark, leaving an opening between the thumb and index finger of perhaps an inch and a half in diameter. Catching the yam-stick with the other hand about four inches from its sharpened end, she brought it vigorously down upon the open space of uncovered bark. The accurate hitting of the small exposed surface with a heavy stick that is over four feet long and an inch thick, caught so much below the centre of balance, must have required a considerable amount of practise to acquire, as she never missed her aim, which is the more surprising, because the yam-stick was not brought down vertically, but almost at an angle of 45°. Any European trying to do this would cut his hand nine times out of every ten strokes he would make. When the roots were pounded almost to dust they were eaten dry, and the men who had not stirred or helped in the least towards preparing this unique repast satisfied themselves first, leaving the coarsest and most fibrous stuff for the women. The taste of it is slightly sweetish, which seems to indicate that it contains a saccharine substance; but the nutriment it furnishes as a whole cannot be very great. The finest of the dust is the sweetest, and undoubtedly contains the greatest amount of sugar particles which may have crystallised during the preparation of the bark.

11*th October*, 1891.—The blacks were busy this morning making message-sticks, for which they used some kind of acacia-wood they call "yauwilli." The wood is worked down with the stone chisel fastened on the end of the spear-thrower and afterwards scraped smooth with the sharp edge of a chip of flint. For this purpose they, however, had already discovered the usefulness of glass, and employed it also. The lines were put on with embers. A piece of hard stick is chosen that will form a well-tapered conical ember on one end. This is fairly firm to stand a gentle pressure, and lasts for some time. Whilst the spiral or wavy lines are put on the ember is kept aglow by gentle blowing. I have no doubt that certain meanings are conveyed by these differently curved, wavy, and spiral lines that may be broken off or interrupted by a circle or bar, but through ignorance of their language I could not understand the meaning of the explanations given by the blacks.

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17th *October*.—Two blacks came to our camp this morning, who seemed to be well known to those staying with us, and were well received by them; the boy particularly displayed great delight. The man possesses a marked Jewish countenance, and the female is rather smarter than the general run of them. She has a number of the red marks on the stomach, which they say are caused by fire through carrying the lighted bark close to the body during windy days. The male has the right central incisor knocked out, is circumcised, and has the urethra completely slit open. During the afternoon two more blacks made their appearance at the rockhole and afterwards came over to the camp. They must have travelled a long distance, as they were very thirsty and drank an enormous quantity of water at the rockhole, and more later on at the camp. The older, a smart and intelligent-looking fellow of about 25, had his head decorated with a semicircle of magpie tail feathers, and wore a peg through his nose. The younger is still a lad and not yet circumcised, although he is getting a moustache. He has an extraordinary large mouth even for a blackfellow and remarkably thick lips. Both have their full set of teeth and wear their hair tied back in the peculiar chignon-like knob previously noted. They come from the south-west, and seem to belong to a different tribe to those who have the teeth knocked out and who come from Hampton Plains, but are evidently on friendly terms with them and speak the same language.

19*th October*.—The blacks caught a number of lizards for me, which are abundant here, but so difficult to catch on account of their swiftness. The method of catching them is ingenious. One of the blacks made a small fan of feathers, about four inches long and wide, which he fastened to a switch, and tied this to two more lengths, so that it resembled a fishing rod with the fan on the end. When one of the lizards was running by, the fan was agitated in front of it a few feet above the ground, by which the attention of the lizard was attracted and when its eyes were rivetted upon the quivering feathers, the other black speared it with the point of his yam-stick, often cutting its head off. The accuracy of the aim was surprising, for I rarely saw them miss, although the lizards are only about half an inch wide. Even through a dense bush I have seen them pierce the little reptiles, which is still more surprising, considering how easily the branches may divert the point of the stick from its aim. The women brought in some bark of roots, which seemed to me as if it had been lying in water for some time. It looked damp and had the appearance of partial disintegration, as if the fibrous substance was parting. Probably it is put in water to loosen the outer brown and earthy covering. They chewed some of it

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during the preparation, sucking the sweetish substance after mastication and spitting the fibrous matter out in the shape of a ball. The preparation requires a considerable amount of labor. The pieces of bark are first broken in lengths of about six to eight inches and split in strips of about half an inch wide. These pieces are then laid on hot ashes, well pounded with the yam-stick, and constantly turned and mixed with the ashes. By this means the outer brown bark is removed, whilst the heat makes it crisp, but the inner white bark remains intact on account of the greater quantity of moisture it contains. When this process is completed the white strips are dried perfectly before the fire and afterwards triturated in the manner I have described before. Only the finest of the pounded stuff is eaten, the coarse and fibrous portion being rejected.

20*th October*, 1891.—I amused myself this evening for some time with the blacks, who were throwing sticks at a small iron hoop rapidly rolled along the ground. This was good practice for them to throw at running game, and amusing exercise for me, whilst my occasional misses afforded great delight to the natives.

30*th October*, 1891 (At the Damsinkers' Camp near the Fraser Range).—I was well received at the camp, found the men engaged at work, and just about finishing one of the dams. A great number of blacks, men and women, were hard at work carrying soil out of the excavation. They had to work in pairs, as they carried the earth on litters made of sacks with a couple of saplings run through them. For this they received a good supply of mutton three times a day. Most of them are of rather small stature, not measuring more than 5 feet 3 inches on an average, and the women less than that. Six or eight old ones of the fair sex are particularly scraggy individuals and extremely ugly. There were, however, a few young men above the average and well shaped, particularly one of them, who was about 5 feet 9 inches high, and the best-made man seen hitherto. Several of the men had deformed limbs caused by burns when young. One of them had half the right buttock and some flesh from his side burned away, and in consequence walked lopsided. A child just able to walk had both its hands burned not long since, and looked a wretched object with all the fingers on one hand distorted and contracted, and the greater part on the other also. Here I also saw a woman with six perfect fingers on each hand and the same number of toes on her feet. Not only are the fingers perfectly formed, but there are the corresponding number of metacarpal bones in the hand. I learn that she has several brothers and other relations with the same remarkable development, but none of them were at the camp during my visit.

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31*st October* (Damsinkers' Camp, F.R.).—During the forenoon I obtained a number of names from the natives. One of them Wainbret by name, who belongs to the coastal natives, assisted me greatly, having the advantage of speaking English fairly well, and being also rather intelligent. The coastal tribe, he tells me, claims about 30 to 35 miles inland, and was at one time very numerous. They neither circumcise, slit the urethra, nor knock out their front teeth. He tells me that all the "Bardeks" (*i.e.*, those that circumcise and perform Sturt's rite) are cannibals when pushed for food. He also made the assertion that the want of teeth was a sign that the man had partaken of human flesh. This may be erroneous, because the coastal tribe somewhat despise the Bardeks, although not now in open feud with them, and even friendly. With the exception, however, of this information, I believe everything obtained from Wainbret to be thoroughly reliable. He readily acknowledged his ignorance if questioned about things he did not know. Another native called "Paddy" also spoke English fairly well. He is a Bardek and comes from the east of Fraser Range tribe. Some of the names he gave me of plants I showed him differ from those of the Fraser Range tribe, and the natives of Hampton Plains have also different names in some cases. The language of the different tribes belonging to the Bardeks seems to me essentially the same, the leading terms and expressions being identical. The language of the coastal tribe, however, seems to differ considerably from it. I regret that I could not make more extensive studies on this subject and did not come a few weeks sooner to this camp, where a favorable opportunity was offered for such a purpose by the congregation of individuals from several tribes. I obtained some etchings on bark made by the natives, representing some crudely-drawn landscapes and other objects. They are produced on the inner side of the bark, when it is still fresh, by a pointed piece of hard wood, and are called "worma." A few remarkable facial types were seen amongst the natives congregated here. There was the one with the very Jewish face already spoken of, who was very delighted torenew his acquaintance with me. He is always happy, revels in little pranks, and is particularly proud of his youngster by wife number two; which, however, I am dubious of being his own on account of his extreme mutilation. Another remarkable type is one that looks exactly like an African negro, both as regards features as well as hair, which latter is extremely short and curly, and almost woolly. A third was called "Frenchman," owing to his resemblance to one. The hole in his nose for the "kondel" had been torn, and in consequence this organ had a peculiar sharp point. His dress, however, contributed greatly towards his French appearanee. It consisted of blue trousers, and shirt of

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the same color, and a red handkerchief for a head cover. These were the remnants of the garments supplied by the Government at Rottnest Island, whence he had just returned, after being transported for twelve months for sheepstealing. During the sunny hours of the forenoon (it was Sunday, and work was suspended) many were engaged freeing each other of the vermin on their heads. The larger of these are not despised as a dainty morsel.

3rd November, 1891.—The blackfellow perceived a small hole in the fork of a large mallee-tree, and from the ants crawling in and out in a continuous string concluded that water had accumulated in the hollow lower down. He quickly broke a twig of a quandong-tree, and loosened the bark of it between his teeth, after which he easily stripped it off, thus forming a tube about a foot long. By inserting it into the hole, he managed to get a drink by suction, and his wife likewise.

9th November, 1891, near Hunt's Well. — The black, his woman and the boy left us to-day, going towards some smoke, where, no doubt, they expected to find some of their tribe; they however returned, bringing an old man with them. This individual has a front tooth knocked out, is circumcised, and has his urethra completely slit open. He wears his hair tied in a knot, and both his shoulders are well marked with tatoo scars.

10th November, 1891.—The old man accompanied us to-day, but the other blacks stayed behind. After dinner, I took him in the bush, for the purpose of sending him up some trees I had seen in flower, but I could not induce him to climb them, and when I wanted him to come back to camp, he urged me to come in the opposite direction, saying "kapi! kapi!" and as I thought he might really know of some water not far away, I followed him. After travelling over a mile, the black increased his pace considerably, stopping occasionally when I did not follow quick enough, and saying "kapi! kapi!," pointing in the direction he was going. However, after another half-a mile more of this game, he ran away and disappeared in the bush. I had been hoaxed by a blackfellow!

The Language.

In dealing with the very important subject of the language and dialects of the tribes encountered on the journey, I much regret that no chance was afforded me of obtaining a sufficient knowledge to acquire something of their structure. The time of their stay in every case when natives accompanied us was as a rule of such short duration that not much more than a limited vocabulary could be obtained from them.

What I have been able to procure is herewith presented in its

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fragmentary state, but however defective the lists may be, by having adhered to the "System of Orthography" prepared by the Royal Geographical Society of London, which excellent and inimitable method enables one to secure a phonetic reproduction, I believe the reader will have no difficulty in pronouncing the words correctly, which is frequently very perplexing with other native vocabularies.

If the language is spoken by an individual who articulates the words correctly, and has a pleasant voice, it is very euphonious, because it not only abounds in vowels, but most words end in one, and none of the consonants have a harsh sound. Perhaps the only exception is the *r*, which in some words is considerably "rolled," but as a rule not to such an extent as to make the sound unpleasant.

To get the correct pronunciation is often difficult on account of the variations of expressions given to certain sounds by different individuals, and can only be obtained from a frequent repetition of the words. In some cases I found it difficult to determine between *a*, *o*, and even *u*, so variably were the words pronounced. This difficulty is still more enhanced by the desire on the part of the natives to attempt to modulate the word, because as soon as they are desired to repeat it they seem to imagine that the word has not been pronounced to one's liking, and alter it; and should you pronounce it ever so incorrectly, they at once agree, and are sure to pronounce it the same way. They are often evidently under the impression that the word is well enough known to the interrogator, who only gives it a different expression, and to please him repeat it in his style; being very quick of hearing, they can repeat almost every sound with a marvellous accuracy.

B and *p*, *g* and *k*, *l* and *r*, and *y* and *j* are often substituted one for the other, so that it became difficult to decide to which letter the sound preponderates; and in certain words it seems optional whether *ng* or only *n* is used.

Frequently a difficulty arises when a word is used in an abbreviated form, or a prefix or affix added; and when an object is shown, and instead of its own name, that of the substance is given it was derived from. For instance, when I wanted to know the name of the nose-stick, I received the one given to the wood it was made of, and when I asked the word for "a leaf," I received the name given to the tree it came from.

The Yunga dialect contains a great proportion of abbreviations in the small vocabulary obtained; from this it appears to me that certain tribes, more than others, are in the habit of shortening their words.

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English.	Everard Range.	Blyth Range.	Fraser Range.	Yunga.	Knutsford.	Yaurigabbi.	Murchison.
Nose	Mulla	Mula	Mulla	Mulla	Mulla	Mull	Mulla
Eye	Kallu	Kuru	Mel, Wardu	Miel	Mel	Kula	Kurra
					Gnalla, forehead	Mugga	
Head	Gnulla	Gnulla, Nulla	Kada	Kad	Kada	Mulla, forehead	Mugga
Ear	Pinna	Pinna	Gulla	Dwunga	Kayan	Kulga	Gulga, Kulga
Thigh	Tunda	Tunda	Tunda	Tauel	?	Tunda	Tunda
Foot	Yinna	Yinna	Yinna	Yen	?	Jinna	Yinna
Blood	Dulgu	Algu, Gurru	Yurnin, Yelgu	Gnoap	Yalgu	Yalgu	Yalgu
Breast	Ibi	Elbi	Bebi	?	?	?	Bebi
Sun	Chindu	Yindu	Chindu	Gnanga	Tyunda	Garong	Kaianyu
Water	Kapi	Kapi	Kapi, Gapi	Kepi, Kep, Gep	?	Kapi, Gabbi	Babba
	Muggatti Warru, hot						
Fire	Puyu	Warru	Kaiya	Kaila	?	Kulea	?
Smoke		Puyu	Voya	Puya	?	?	?
			Taminyi—				
Lips,		Dā, moustache	mouth, lips	Tā, mouth			
Mouth, Tongue	Dā, lips	Dallin, tongue	Talit, tongue	Min, lips	Tga, lips	Gallan, tongue	Dallin, mouth
Wound	Pika	Pika	Mindin	Kwud	?	Kálleya	Pika

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Although I have not obtained any information regarding the grammar of the dialects, I am inclined to conclude, from the comparison of the vocabularies, that the language is essentially the same, because many of the principal words are found in all of them, or re-occur at a distance after they have been substituted by another word in the neighboring tribe. To demonstrate this I have tabulated a few of the leading words, and a larger list might be made, but those selected answer the purpose sufficiently.

The correct accentuation of a certain syllable is, no doubt, very important, but a distinct rule for it does not seem to exist. Generally in words of two syllables the accent is laid on the first, and, as a rule, the sound of it is slightly longer. Often, however, no syllable is specially accentuated, and the length or shortness of the vowel governs the accent, either by being more or less dwelt upon or through the modulation of the sound. In words of three and more syllables the penultimate is generally accentuated or dwelt upon. When the case was otherwise, or when a syllable was specially accentuated, I have marked it with an acute accent to denote the stress.

The following amplification of the rules of the Royal Geographical Society's "System of Orthography" will serve as a key to an approximately correct pronunciation of the words:—

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Letters.	Pronunciation and Remarks.	Examples.
a	*ah*, *a* as in *father*	Java, Banána, Somáli, Bari, Suákin.
e	*eh*, *e* as in *benefit*	Tel-el-Kebír, Oléleh, Yezo, Medina, Levúka, Peru.
i	English *e*; *i* as in *ravine*: the sound of *ee* in *beet*. Thus, not *Peejee*, but	Fiji, Hindi.
o	*o* as in *note*	Tokio.
u	long *u* as in *flute*; the sound of *oo* in *boot*. Thus, not *Zooloo*, but	Zulu, Sumatra.
ai	English *i*, as in *ice*	Shanghai.
au	*ow* as in *how* .. .. .. Thus, not *Foochow* but	Fuchau.
ao	is slightly different from above	Macao.
ei	is the sound of the two Italian vowels, but is frequently slurred over, when it is scarcely to be distinguished from *ey* in the English *they*.	Beirút, Beilul.
b	English *b*.	
c	is always soft, but is so nearly the sound of *s* that it should be seldom used. If *Celebes* were not already recognised it would be written *Selebes*.	Celebes.
ch	is always sounded as in *church*	Chingchin.
d	English *d*.	
f	English *f*, *ph* should not be used for the sound of *f*. Thus, not *Haiphong*, but	Haifong, Nafa.
g	is always hard. (Soft *g* is given by *j*)	Galápagos.
h	is always pronounced when inserted.	
j	English *j*. *Dj* should never be put for this sound ..	Japan, Jinchuen.
k	English *k*. It should always be put for the hard *c*. Thus, not *Corea*, but	Korea.
kh	The Oriental guttural	Khan.
gh	is another guttural, as in the Turkish	Dagh, Ghazi.
m, n	As in Eng'ish	
ng	has two separate sounds, the one hard as in the English word *finger*, the other as in *singer*. As these two sounds are rarely employed in the same locality, no attempt is made to distinguish between them.	
p	As in English.	
q	should never be employed; *qu* is given as *kw*	Kwangtung.
r, s, t, v, w, x	As in English.	
y	is always a consonant, as in *yard*, and therefore should never be used as a terminal, *i* or *e* being substituted	Kikúyu.
	Thus, not *Mikindány*, but	Mikindáni.
	not *Kwaly*, but	Kwale.
z	English *z*	Zulu.
	Accents should not generally be used, but where there is a very decided emphatic syllable or stress, which affects the sound of the word, it should be marked by an *acute* accent.	Tongatábu, Galápagos Palâwan, Saráwak.

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Vocabulary of three Dialects obtained from the Half-caste, Billy Weaver, living at Warrina.

English.	Wangarabunna.	Diyeri.	Andijiringna.
Come here!	Kauanna, Pitchi ...	Kopperau, Yarra wulkanna	Pitchi
Run!	Minderau	Minderau	
Be quick!	Mindinna	Nurrialla, Bukkali* ...	
Walk, go, go to	Ukunda	Wappina	
Which way?	Wittiarra	Wandeanna, Wudárri ...	
Where are you going to? Which way walk? ...	Wittiarra ukunda ...	Wandeanna wappina ...	
	—	—	
Give it to me	Munyinda	Inginna	
I give you	Umbā munyinda ...	Minni inginna	
Will you give it to me? ..	Umbā munyinda mai ...	Minni inginna mai ...	
What will you take for it? ...	Migna umba mundada kalla	Migna atu inni kalla inginna	
Are you satisfied? (with the bargain)	Umba yuta	Juni malla mundada ...	
		—	
I don't know	Annoku	Annoku	
What do you mean? ...	Withiera	Minna	
What way water lie? (Where can I find water?) ...	—	Wadearra gnappa wappina	
		—	
I am a friend (=blackfellow)	Autunni nulla	Akonni kurna	
I am very fond of you ...	Atu nuka anyúdda ...	Atu pinna anyúdda ...	
I do	Atu	Atu	
Very much	Nuka	Pinna	
Like you	Anyúdda	Anyúdda	
Old woman	Wulliulla	Willurbuna	
Old man	Mattabudda	Pinaru	
Man	Nulla	Kurna	
Young man	Mattaru	Mattaru	

* Is not a true native word, it is much used in Queensland.

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English.	Wangarabunna.	Diyeri.	Andijiringaa.
Young woman	Munkárra	Munkárra	
Boy	Wúya	—	
Girl	Kúya	—	
Lazy scoundrel	—	Gnuya	
Eye	Milyardi	Milki	Mialla
Nose	Midla	Mudla	Mulla
Ear	Yarri	Tulpa	
Mouth, lips	Manua	Manua, Tundna ...	
Breasts	Gnamma	Gnamma	Gnamma
Back of neck	Workarra	—	
Teeth	Yakkarra	—	
Bone	Walpu	—	
Blood	Kumári	Kumári	
Hand	Múrra	Múrra	Múrra
Foot	Tidna	Mundaui, Tidna ...	Tinna
Food	Chalpa	—	
Flesh-meat	Karthi	—	
Fire	Makka	Makka, Turu	Karla
Water	Kutha	Gnappa	Kapi
Sandhill	Múdlu	Kunchari,* Daku ...	
Devil	Kumpira	Kuchi	
Moon	Pirra, Piralla	Pirra	Pirra
Sun	Muyu	Ditchi-punda ... ... (Big star, or as given, star big)	Chindu
Earth	Wadlu	Mittha	
Star	Kardividla, Ditchi ...	Ditchi-wauka ... ... (Star small)	
Creek or river	Kurla	Kurriri	
Mountain, big hill, also stone	Kidgna, Kattiwurru ...	Murda	

* Is also the name of a place at Cooper Creek.

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Lightning	Piru	—		
Thunder	Maiawurdli	—		
Rain	Kurarra	—		
Whirlwind	Wilchekuva	—		
Track	Winpa	—		
Gun, or any firearm	Mukkati*	Mukkati		
Native hut	Bogunya	—		
Yam stick	Wadna	—		
Wooden vessel (for carrying food or water)	Putu	Pirrā		
To go back	Tikunda	Tikunda		
To camp	Gnura	Gnura		
To sleep	Kudnalunda	Turranna		
To die	Purrunda	Pallina		
To-morrow	Wungarabudo	Tunkabinna		
To-night	Wongna alpuru	Tinkauitti		
Directly, now	Karrari	Karrari		
I	Mura	Unna		
You	Umba	Inni		
One	Muyu	Kunu		Maiu (?)
Two	Parculu	Mundru		
Three	Kulbari	Parculu		
Many (more than three)	Murrapu	Murrapu		
Yes	Gnarai	Kau		
No	Padni	Padni		
High	Marri	Mari		
Big	Kattiwerru	Punda		
Small	Kupakupa	Wauka		
Very large	—	Tundrapinna		
Fat	Murni	Murni		
Thin	Erónya	Muko (?)		
Good	Gnurku	Umu		
Worthless (no good)	Mudlanti	Mudlanti		
Angry	Kulanda	Kula		

* By some is supposed that this word is a corruption of *musket*, but it is evidently derived from *makka*

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English.	Wangarabunna.	Diyeri.	Andijiringna.
Red	Mittakka	Muralyi	
Green	Nidluürru	—	
Yellow	Arrumadla	—	
White	Warru	Purlu	
Black	Billabilla	Marru	
North	Tinanangarra	Tidnangarra	Tinangarra
South	Kunnangari	Kudnangari	Kunangari
East	Terriwā	Terriwā	Terriwā
West	Yandauürra	Yandauürra, Yandakurra ...	Yandauürra
Dingo	Mudlayapa	Kintalla, Yappulu ...	
Kangaroo	Kungarra		
Opossum	Wumbula		
Emu	Worrugatti		
Crow	Wukkalla		
Hawk	Kukunga		
Owl	Kurkurruku		
Swan	Kuti		
Blue Crane	Wurru		
Iguana (Varanus Gouldii ...	Karperri		
Jew lizard (Amphibolurus barbatus)	Kadni		
Snake (large non-venomous)	Wummā	Wummā	
Snake (venomous, light grey-yellow belly)	Wiparu	Wiparu	
Large fish (sp. ?)... ...	—	—	
Small fish (bream ?) ...	Markara	Markara	
Box-tree	Mudlakupa	Mudlakupa	
Grass	Piétna	Pattāra	
Saltbush .- ...	Yalpa*	Kuntha	
	Boltu	—	

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Vocabulary obtained from Natives of the Everard Range Tribe.

Parts of the Human Body.

Gnulla, head
Munga, hair (of head)
Kunya, beard
Pinna, ear
Mulla, nose
Dā, lips
Karsetti, Karditti, teeth
Kallū, eye
Kallū yinbi, eyebrow
Yurri, arm
Malla, hand, finger, thumb
Tunda, leg, thigh (?)
Yinna, foot
Pirri, finger or toe nails
Ibi, breast
Willa, belly
Manna, seat of body
Dulgu, blood
Kumbu, urine
Pika, wound
Pika pilia, circumcision and the slitting of the penis
Chipallé, tatoo scars found on back and chest

Various Objects and Terms.

Chindu, sun
Piya, moon
Kellilpi, star
Chitungu, rainbow
Kapi, water
Muggatti, fire
Muggatti puyu, smoke
Muggatti ella, charcoal
Warru, hot
Biani, cold
Ningna, frost
Papa, the barking of a dog

There was a dog in our camp, and as the native dogs do not bark, but only whine, the word may most likely not mean barking in the sense we understand it, and probably is applicable to the natural sound made by every animal. At first I thought it an exclamation of surprise, because the sound of a dog's bark must have been unknown to the natives; but I am convinced that it is intended for the barking of the dog.

Yinna yanu, to walk
Nurtpa, I don't know
Kaitiu, rock
Kulbi, painting
Katui-kulbi, rock-painting
Puringu-hindu, dog's hair, or fur

The distinction between fur and human hair is to be noted.

Wanna, digging-stick (yam-stick)
Wera, Mika, wooden water-bowl; also used for carrying food and other substances in
Winda (Oinda), spear
Iduru, a strong stick made of heavy wood, about three feet long, and a sharp stone stuck on one end

Used for making weapons and implements, and is also sometimes used for the purpose of knocking down game.

Mira nakata, the wooden spear-thrower

This implement has also a sharp piece of flint fastened at the end near the handle, and is used, like the Iduru, for the purpose of chipping out implements and weapons.

Dula, the cement with which the edged stones are fastened to the above implements

It is the exudation of some Xanthorrhea species mixed with sand.

Ilindi, a burning bunch of grass; faggot
Ō, yes

Zoological Objects.

Malla, spinifex wallaby (Largochestes sp.)
Wainta, opossum
Puringa, dog
Walliputti (Myrmecobius fasciatus)
Kaleya, emu
Wainuti, turkey (Otis australis)
Wilda, eagle (Aquila audax)
Wilu, curlew (Œdicnemus grallarius)
Milka, Cinclosoma castaneonotum
Chitta, nest
Nokum, egg
Chitta minna, nest of (sp. ?)
Milka nokum, egg of Cin. castaneonotum
Mineri, Moloch horridus
Milbelli, Varanus Gouldii
Murlinga, Hinulia Lesueurii
Waura, Diplodactylus sp.
Pigonti, Lygosoma ciliaris
Piur, Rhynchœdura ornata
Jammi, Lialis Burtoni
Binda binda, moth
Wanga, caterpillar

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Mako, larva of a large wood-boring beetle or a cossid moth.

Much sought after for food.

Parana, ant

Ebilka, pupa of ant

Wanna ilka, Mamma kalka, the pregnant female of a wood-eating ant.

The abdomen of this insect expands to the size of a small hazel nut, and is quite spherical. It becomes semitranslucent light yellow, and tastes sweet. The blacks are very fond of them.

Murta murta, beetle

Merrui, Curculio sp.

Muldūn, Longicorn sp.

Kumbumburi, the dark-brown Blattæ living under bark (? Panesthia brevicollis)

Kauwan, Phasma sp.

Yindilka, grasshopper

Billarbi, Paragryllacris deserta

One of the Gryllidæ, living in damp dark places.

Kampu, centipede

Koji, earthworm

Opilpi, Apus australiensis

A species of Crustaceæ living in stagnant pools of water.

Pie, Nakaiya, snail shell

Botanical Objects.

Wiyindi, corkbark-tree (Hakea lorea)

Undulla, native poplar (Codonocarpus cotinifolius)

Kirni, Dodonæa viscosa

Kirkin, Myoporum sp. (?)

The flowers of this shrub have a rich scent resembling the perfume of verbena.

Iguarra, mulga (Acacia sp.)

Bunbun, peach-quondong (Santalum acuminatum)

Bunbun kalka, peach fruit

Mongata, peach stone

Bundi, broom (Cassia desolata)

Pila, Chanbi, spinifex (Triodia sp.)

Gilgalla, Iria, rolypoly (Salsola kali)

Puta, grass

Okiri, native tobacco (Nicotiana suaveolens

Mindinga, Parka parka, fructification; also galls

Tindulla, Eucalyptus tessellaris

Tadulla Eucalyptus pyriformis

Mulba, bovistæ, and probably also other species of fungi

Dalli, wood fungus (Polyporus sp.), red

Gurgu tadulla, Gurgu muldul, Kurpi dalli, wood fungus found on casuarina and mulga, brown

Perka, Thryptomue flaviflora, desert desert ti-tree

Vocabulary obtained from Natives of the Blyth Range Tribe.

Parts of the Human Body.

Nullimba, man

Jimba, young man, boy

Nulla, Gnulla, head

Kurru, eye

Mula, nose

Pinna, ear

Kadduru, hair

Kanda, beard

Dā, mustache, lips (?)

Seri (the *s* is very sharp), throat

Wimbindi, lips

Karditti, teeth

Dallin, tongue

Marka, chest

Elbi, teats

Yundi, navel

Wila, stomach

Yambi, shoulder (and upper arm ?)

Yari, arm (upper ?)

Minna, arm (lower ?)

Maira, hand, thumb, and fingers

They have evidently no special terms for thumb or fingers. I rehearsed several individuals upon this.

Milti, nails

Manna, seat

Angalba, hip

Tunda, thigh

Talpa, leg

Matta, knee

Yinna, foot

Yinna mamma, big toe

Yinna ngnalli, small toes

Malla, Mailu, bone

Gnambu, sexual organs

This seems to be derived from Nambu or Gnambu, egg; but it seems to be applied to the penis, scrotum, and testicles.

Algu, Gurra, blood

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Pika, wound, bleeding
Wadina, circumcision
Turta yarni, Alladiganti ?, the slitting of the penis

Various Objects and Terms.

Binanni, Yugal, Wadingari, heaven
Yindu, sun
Piya, moon
Gililpi, Yinnani, Yuka, star

The last two names are probably applied to some special star.

Manda, earth, sand
Kaitiu, rock
Wallu, range
Kandi, flint
Wannei, chalcedony
Maddar, ochre
Kapi, water
Warru, fire
Puyu, smoke
Alte, charcoal (ashes ?)
Winda, spear
Kadji, Kujarra, small spear
Turtimba, Turti, Kukarungati, the short, slightly-bent throwing-stick which they always carry in the belt for the purpose of throwing at the game
Meru, the spear-throwing lever
Magulba, the hook of the Meru that fits into the hole of the butt-end of the spear
Kandi, Kundi, Gundi, the stone fastened at the end of the Meru near the handle, and used for shaving implements into shape

Generally a piece of flint. Vide supra.

Gidi, the resinous cement to fasten the Kandi with

Xanthorrhea gum mixed with sand.

Wanne, stout stick, with stone chisel on one end.

Used for throwing at game as well as for working wood.

Wanna, digging-stick (Yam-stick)

This word sounds very similar to Wanne, but there is a distinction. I have never seen the blacks use the Wanne for digging purposes. The Wanna is carried by every one, and constantly in use for the purpose of digging out all sorts of roots or animals. It is a stout stick of about an inch in diameter and from four to five feet long. The one end of it is slantingly tapered from one side, and the point rounded and well hardened in the fire.

Wera (small), Yilgalla (large), wooden bowl to carry food or water in

The Wera is also in constant use as a shovel. After the ground has been loosened by the Wanna, the earth is removed by the Wera, and in a remarkably short space of time a depth of several feet may be reached. I have seen a couple of natives go down with these simple tools a depth of over three feet in less than ten minutes, and secure a Myrmecobius fasciatus from its lair.

Abu, a piece of rock of any formation that may comfortably be held in one or both hands, and which is used for the purpose of grinding acacia and other seeds for food, as well as the pigments that are used to paint the body
Ō, yes
Wila amma, stomach hungry
Chiggen, I have had my share
Angu, sleep, to sleep
Kuka, eat

This word I took for a long time for a corrupted term for cooking, but now believe it to be a genuine aboriginal expression.

Ganba, vomit
Palka, strong, big

Zoological Objects.

Wainta, opossum
Daualpa, small marsupial

Smaller than a kangaroo rat.

Metāka (the long *a* like in late), Largochestes
Malla Kulü (ü like in German *ue*), the young of a wallaby sp. (Petrogale lateralis)
Wallaveru, Wailäura, eagle (A. audax)
Iteranga, hawk
Maurka, pigeon (Ocyphaps lophotes)
Kurkur, owl
Wanna, redbreast (Ephthianura tricolor)
Wangu, nest
Nambu, egg
Kay unga, flown away, to fly away

I got this word when trying to get the gun to shoot a hawk, and kept a black watching the bird.

Murlinga, lizard (Hinulia Lesueurii)
Jindalpa, frilled lizard (Amphibolurus barbatus)
Makobundi, larva of Cossus sp.
Pia, snail shell

Botanical Objects.

Putta, grass

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Putta kara, Aristida arenaria

When this name was given to me the black coughed, and made a sign that the Pseeds and awns produced coughing. Probably Kara means to cough, or getting sick, vomit.

Wangurna, Eragrostis eriopoda
Elinya, scented grass (Andropogon bombycinus)
Barka, bush, small tree
Ellimai, fig-tree (Ficus platypoda)
Medurtu, pine-tree (Callitris verrucosa)
Undalla, pepper-tree (Gyrostemon)
Wejindi, cork-bark-tree (Hakea lorea)
Waputti, tea-tree (Melaleuca sp.)
Mángatta, peach-tree, quandang (Santalum acuminatum)
Alpa kara, Euphorbia Drummondii
Pulanda, native tobacco (Nicotiana suaveolens)
Malumbumbi, geranium (Erodium cygnorum)
Kauba, Yilkaryilka, Solanum petrophilum
Ilguarra, Puyarra, Ultagumba, Kurpa, mulga (Acacia species)
Minyu, Munyu, Acacia dictyophleba
Waitargo, Acacia salicina
Kabil kabil, Cassia pleurocarpa
Bundi, broom (Cassia desolata)
Yenumba, Dodonæa viscosa, var. lanceolata
Umbagumba, Ultagumba, Grevillea junciofolia
Urdu, Gnaphalium sp.
Ulurla, Helichrysum apiculatum
Gnaugrau, Eremophila latifolia
Geringerin, Sida petrophila
Purarpurar, Ptilotus obovatus
Arbitta, ? Heliotropium
Pudya gauba, Goodenia heterochila (gauba, to vomit?)
Alla, Altarpa, Eucalyptus pyriformis
Tumbudjumbum, a flower
Wangu, spinifex seed

Probably all kinds of seed; because—

Wangu means also young plant, small plant, and
Wangu, Scævola depauperata

VOCABULARY OBTAINED FROM SEVERAL NATIVES MET NEAR THE FRASER RANGE, and belonging to various tribes which are friendly *inter se*. They inhabit the districts to the east and west of this locality and to the south to about 100 miles from the coast. To the north-west at Hampton Plains a small tribe is living that is also friendly with them. The habits and language are essentially the same with all of them, but in some instances different terms are applied for the same object. Whenever "east" or "west" is attached to any word it means that it is used by tribes living in this direction from the Fraser Range.

PARTS OF THE HUMAN BODY.

Minnin,* Bulga, Malba, man
Kīja,* Wandi, boy

*The first of these terms are always readily given, but they sound very like corrupted English—from man and kid.

Diurli, woman
Maddal, young woman, virgin
Wanya, little girl
Kāda, head
Yúarru, Gnamba, forehead
Kāda birdi, Kāda wendu, hair
Kāda doran, the chignon-like knob of hair at back of the head, formed by tying the hair back by means of some namba
Kāda namba (nanba, gnanba), twisted string made of human hair, to tie the hair back with

Often very long, going perhaps a dozen times or more round the head and as often crosswise over the chignon. It is also used round the waist to hold weapons and utensils, and for the purpose of suppressing the cravings of hunger it is tightened.

Kāda wurna, head cover, hat
Mel, Wardu, eye
Mel wendu, eyebrows and eyelashes
Mel nimbit, Mel calba, eyelid
Mulla, nose
Kayīyin, the hole in the cartilage of the nose to put the kondel through

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Gulla, ear
Taminyi, mouth, lips
Yeri, teeth, jaw
Jirbu yeri, jawbone
Talit, tongue
Angur, beard
Murni, mustache
Gnangur, chin
Nidya, cheek
Kurlu, neck
Kalbi wilyindi, shoulder
Wanga, arm
Wanga ungu, upper arm
Kurkunaki, elbow
Mare, Maia, Maiya, hand, fingers
Mare agu, thumb
Mare kulbut, index finger
Mare kudja, little finger
Mare beri, finger nails
Danga, Jirbu, bone
Waiyul, skin
Gnarka, chest
Bebi (pronounced like "baby"), teats
Narka, Warma, tattoo marks on chest and back
Gambu, back
Mugalla, belly
Nunyit, navel
Tabit, penis
Gnangna, seat
Tunda, thigh
Gora, leg
Yinna, foot
Yinna murlu, heel
Yinna balga, toes
Yinna beri, nails of toes
Murdi, knee
Mugalla birbin, big belly, pregnancy?
Yurnin, Yelgu, blood
Gnāla yurnin, veins
Gnuan, shadow
Mindin, Andan, Derriga, wound, sore
Kurdudu, heart
Yarall, lungs
Gnaldi, liver
Gambitti, stomach
Maryal, small intestines
Dangul, Dardul, Niedi, large intestines
Barda niedi, the fat of the intestines
Gurna, Minyin, excrement, voiding diarrhœa

VARIOUS OBJECTS AND TERMS.

Nalgun, Gnalgun, to eat
Algun, Wotta meauwud, the latter term, I think, means to masticate
Mel nangú, to see
Perridi, to hear
Kurdi, Kudadni, to laugh
Palluli, to cry
Maiya, to sing
Maiya bord, to shout
Woid (?), to whistle
Bungun, to strike
Woedwoea, Annuru, to fly
Gidjibu, to tickle
Billanyināri, to sit down
Maya mirrat, to whistle
Kandun, to smell (sense of smelling)
Mulla karulla, to sniff, blow nose
Mulla kardit, Mulla ninyurbut, to sneeze
Palerngun, Gurtimau, to walk
Palluwed, to lie down
Kudgnalla, Kuballyn, Bukkaman, to sleep
Turnda, to vomit
Gonyin, to paint the body
Mendi, to have pain in the stomach, to be ill, illness
Kakabukka, Mandin, die, dead

The latter word seems to be related to Mendi, illness, and Kakabukka is probably the same as Bukkaman, *i.e.*, fast asleep. It is very likely that these tribes have the same belief as those living in other parts of Australia, namely, that they do not actually die, but only go to sleep, to be changed into another form.

Ō, yes
Kaiannu, one
Kutharra, two
Mangurra, three
Warrul, three, four, and more
Chartudi, manny
Padu padu, five or six (or more?)

When the numbers go beyond three it appears the mind of even the most intelligent become confused. Five they conceive probably better on account of their digits, but six is again incomprehensible to them. I took six Quondang stones and laid them on the ground in pairs, and again in threes, and then taking one away from the five in various groups; each time it was Padu padu.

Kapi, Gapi, Mijal, Walbi, water

The first term is the most commonly used.

Kapi dilbin, rain
Kapi bar, thundercloud, thunderstorm

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Kapi kulladunya, rockhole (holding water)
Kaiya, fire
Kaiya voya, smoke
Kaiya bar, Bar, lightning
Irgalyu, charcoal
Bunga, ashes
Mamma ange, thunder
Malga yet, Malga bildi, cloud
Wandurka, Gurrurringa, Kurringa (abbreviation), rainbow
Pika, Birrilla, wind
Yinga orarringa, whirlwind
Tanba, duststorm, whirlwind
Chindu, sun
Burnga, star
Parna, earth
Puri, stone
Puri irrillya, quartz, white stone
Kadji, Winda, spear
Meru, Wordat, spear-thrower
Tadil, Warā, hook of spear-thrower
Baital, the sharp stone at the end of the spear-thrower

Used as a chisel. It is mostly a piece of flint.

Gnora, the cement used for fastening the Baital

It is made from the resin of the Grass-tree (Xanthorrhea), which is mixed with sand and dust.

Kaili (east), Wallena (west), boomerang
Unain, Vergu, message-stick
Yilbar, Kundain, an oval piece of wood nine to twelve inches long, and from two to three inches wide; flat on one side, and rounded on the other, and sometimes half an inch thick in the middle

The flat side is mostly ornamented with carved lines forming various designs. The rounded side is smooth. A hole at one end allows it to have a string passed through, by which it is rapidly rotated through the air, to produce a loud burring sound. This serves to warn the women that some ceremony is going on which they must not attempt to see. The women must not even look upon the yilbar at pain of death; it is therefore carefully hidden from them.

Kondell, Wondarra, nose stick
Balga, Yauwilli balga, Dalgerri yauwilli, Yauwilli talla, a thin stick about four inches long, and pointed on both ends

It is used for pinning the hair together, as well as for piercing holes, &c. Mostly it is marked and ornamented by means of the glowing end of a piece of stick from the fire.

Yari, water or food-bowl, made of wood
Moya, canoe-shaped vessel for water or food, made of a thin sheet of Eucalyptus bark

The sheet of bark is folded on two ends, and the folds gathered and tied with a strip of flexed bark.

Worma, picture etchings on bark

These are done by scratching the green bark on the inner side with a sharp point.

Yindinga, a head ornament used during some dances

It is made of a thin stick, which is shaved down with a sharp stone, the fine shavings being kept attached on one end. At intervals of about four inches, and where the shavings are still fast, these are formed in a spherical, loose ball, their curling allowing them to be easily matted together with the hand. Often the down of birds are put on to these balls, and for further ornamentation the stick on the intervals is colored red with blood. For making this ornament, the young, straight shoots of casuarinas are used, the wood of which is very white, and easily worked. Two are used at the dance, one on each side of the head, rising horn-like about two feet in the air.

Malga mintorat, house, tent, &c.

Verb, "to keep rain out."

Minda, Wanomu, the shelter made by the blacks with bushes and brushwood
Dirgan, Wandamoin, pipe clay
Irrillya, the bright gypsum in its natural state
Dergan, roasted gypsum, and used like pipe clay for painting the body
Pori, Kulbar, a track
Anurru, Murdu, flying, to fly
Maiawangi, Maiwangi, the cawing of the crow
Yurnin, red
Tel, white
Kumma, black
Kuyal, green
Gnalla (Nalla) yera, Gnalla (Nalla) guya, the edible bark of the roots of some mallee in its natural state
Gnalla (Nalla) yindalya, the same after having been dried and pounded to dust, ready to be eaten

Zoological Objects.

Maryurru, spinifex wallaby (Largochestes sp.)
Damma, opossum

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Dangu, Myrmecobius fasciatus
Pigurla, kangaroo
Pigurla kade, skull (head) of kangaroo
Kandun, bird (hawk?)
I showed a black a skin of one.
Gillilka, hawk (Hieracidea occidentalis)
Tulla, emu
Tulla gnambu, emu egg
Gnambu, egg
Yarda, eagle (Aquila audax)
Gurbarru, small magpie (Cracticus nigrogularis)
Yelyel, common magpie (Gymnorhina leuconota)
Yimbalu, black magpie (Strepea sp.)
Banban akamina, Oreoica cristata
Banban gudarra, Oreoica sp.
Wajigga, crow
Barrul, turkey (Otis australis)
Nundi, tail
Mullabutta, snake
Galga, Veranus Gouldii
Nurrill, Billalla, blue-tongued lizard (Tiliqua occipitalis)
Bigúrru, Trachydosaurus rugosus
Yurnga, Odatria punctata (?)
Aballa, Amphibolurus cristatus
Ilgilli, Amphibolurus sp. (?)
Yed, Diplodactylus spinigerus
Barula, Gymnodactylus Miliusii
Boid, Trapidolepisma sp. (?)
Gidda minyin, Moloch horridus
Malda minyin, the knob on the head of M. horridus
Probably Malda means topknot or crest generally.
Mika mika, butterfly, moth
Munbau, large moth (Cossid or Pirales)
Also the larva of same, which is a favorite article of food.
Wandanderi = pupa, Wandanwalla = cocoon, of Munbau
Marditti, the larva of a wood-borer, much smaller than Manbau; also the larva or pupa of a Psyche. sp.
Both are a favorite food.
Windurbiddi, the caterpillar of a procession moth
Probably the name given to a caterpillar generally.
Nurnun, beetle
Dallibrindi, Gigadema sp. (Carabid)
Uei, Chrysobothris atrata (Buprestid)
Muragnan, large longicorn beetle (Prionoplid)
Milbar, longicorn beetle (Phoracantha sp.)
Burnar, lamellicorn beetle (Melolonthid?)
Yidadyi, curculionid beetle (Amycterus sp.)
Minga, ant, small black species
Minnin, ant, brown-bodied, and smelling very pungent
Yindalga, grasshopper
Burdunnū, Phasma sp.
Binbit, Yirrell, cicada
Warneyad, scorpion
Dardalyung, centipede
Gaira, spider
Barna mamma, ant lion (Myrmeleon sp.)
Birang birang, silver fish (Lepisma)
Tulluyirdal, Blatte sp.
Immir, blatta (Polyzosteria Mitchelli)
Yerbit, Helix sp.
Wialwuda, Bulimus dux
The blacks about the Fraser Range did not know the rock wallaby (Petrogale lateralis), nor the pink-breasted cockatoo (Cacatua ios), nor the handsome bowerbird (Chlamydodera guttata). I showed prepared skins of all these to several of the natives.

BOTANICAL OBJECTS.

Pírrini, Scævola oxyclona
Pandiū, Scævola spinescens
Tau, Dæmia Kempeana
The flowers and buds of this plant are greedily eaten by the aborigines. They taste very like the seeds of the common marshmallow. It is generally considered that the plants belonging to the Asclepiadeæ are poisonous on account of their more or less acrid juice, but this does not seem to be the case with this plant. At least the buds of it are not, for I have eaten a number of them without the least ill effect.
Kurdullu, Cynanchum floribundum
Kurdullu, Marsdenia Leichhardtiana
Udya, Solanum Oldfieldii
Wobu yeri, Solanum orbiculatum
Gambunyöin (East), Teucrium fililobum
Gumbu gumbu, Heliotropium asperrimum
Bulgar, sugar-tree, false sandal (Myoporum platycarpum)
This tree sometimes exudes large masses of yellowish-white manna-like gum that has a pleasant and very sweet taste. In spite of this, however, the natives do not care much for it as an article of food, probably

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of some laxative properties it may possess. This I concluded from signs made by the native whom I gave some to eat. He ate some, and dissolved some of it in water later on, and drank this; but all he consumed was but little, nothing like that he would have done had he considered it good food.

Wairu, Bulgar yumbu, the gum of the sugar- or sandal-tree

Dumbai,* peach, quandang (Santalum acuminatum)

Miduru, cypress pine (Callitris verrucosa)

Milgar, grass-tree (Xanthorrhea Preissii

Molilli, casuarina, shrub (C. humilis)

Tarlannu, casuarina, tree (C. acutivalvis)

Kararda, mallee, shrub-like kind (Eucalyptus incrassata)

Yulga, grass

Battara, rush (Lepidosperma gracile)

Niurni, Dianella revoluta

Bambul, lichen

Bulbul, Bovista sp.

Yera, root

Ueni, bark

Dalgalla, leaf

Nieru, flower

Milga, fruit, seed, kernel

Daldal, Mindi, prickles or thorns

Also in zoology—for instance, the spines on the back of Moloch horridus.

Gnora milgar, resin of Xanthorrhea

Gnora miduru, resin of Callitris verrucosa

Kari, gum of mallee (Wawalya)

Kauwa yauwilli, Tundul yauwilli, the seed of Yauwilli (Acacia leiophylla)

This, like all other acacia seeds, is used for food by the aborigines. In the interior near most of the rockholes shallow depressions may be seen on the flat-lying rocks, where seeds have been ground for generations, by which the surface has become polished in these places. I think the terms Kauwa and Tundul stand for all similar seeds, and the name of the tree whence gathered from is attached for the distinction.

The gum of Yauwilli is also a favorite food, and always eagerly eaten when found during a day's tramp.

Waiyul, the edible flesh of the peach and other fruits of the same genus. Waiyul means also skin

Vide above.

Nurgu nurgu, Boiya (East), Thysanotus Patersoni

Also the bulb roots of this plant, which are used as food and eaten raw.

Malli malli, Thysanotus Patersoni

The plant and tendrils of it.

Darga, kurrajong-tree (Brachychiton Gregorii)

Chal, roly poly, Salsola kali

Bogarra, lignum, Muehlenbeckia Cunninghamii

Pindan,† Kuyal (East), Geijera parviflora

Yinnaguyal, Gnephosis sp.

The word seems to be a compound of Yinna (foot) and guyal, or kuyal (green), which also seem to designate anything green, *i.e.*, a plant. This would construe Yinnaguyal into a "low plant," one that grows near the feet.

Yalyal, Tecoma australis

Buddad, Maddambur (East), Eremophila latifolia

Daryet, Irdarda, Eremophila alternifolia

Moil-tawari, Eremophila longifolia

Darrul,† Exocarpus aphylla

Darjeru, Alyxia buxifolia

Peiyul, Bandi (East), Melaleuca elliptica

Warralya, Milkupuddi,† Eucalyptus largiflorens, var.

Tundēr, Menno (East), Acacia salicina

Billalla, Kurdening (East), Acacia subcoerulea

Badínni, Waingwaing, Acacia sp.

Mulda mulda. Oxalis corniculata

Dulli dulli, Wunduwundait, Hibiscus Farragei

Wurdun gaidyi, Erodium cynorum

Bindal bindal, Helipterum floribundum

Wandurgundur (East), Erechthites quadridentatus

Warot, Cassia Sturtii

Wallun, Aster sp., shrub

Wardurbitti, Pittosporum phillyroides

Warril, Baru,† Beyeria viscosa

Mulda mulda, Ptilotus spathulatus

This name, also given me for Oxalis corniculata, makes me think that Mulda mulda is a term for any low-growing plant which is not specially named, or for which the name is unknown by the native asked. As anyone might say "a weed" that wished to generalise.

* Names marked thus are also used to the east of F. R.; those marked † are also used to the west of F. R.

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Tudjinundinundi, Ptilotus obovatus
Tudyumbumbu, Ptilotus hemisteirus
Tudynurndundi, Ptilotus Drummondi

These three names are given to either of these plants, and probably variations of the same term or sound.

Tillol, Atriplex stipitatum
Niuenning, Rhagodia crassifolia
Wandundait, Rhagodia spinescens var.
Buddani, Malnoyi, Pinda, Kochia sedifolia
Mindi mindi (East), Tetragonia expansa
Parka, "mallock poison" (Gastrolobium sp.
Kummenok, Gastrolobium bilobum
Wondari, Wandai, Pimelea microcephala
Milbar, Cassia eremophila
Mori, Daviesia aphylla
Durgun, Pluchea conocephala
Yinnuelma, Helichrysum ambiguum
Gunthur,† Kundur (East), Helipterum tenellum
Gambunyoin (East), Teucrium fililobum
Yinyin, Stipa elegantissima

Vocabulary of Hampton Plains Natives obtained from a Black who accompanied us a few days.

Yedda, Mulläudda, snake (Pseudechis australis)
Undin, leaf
Dalgalla, leaf, small branchlet
Nieru, flower
Welbu, the dead outer bark of Eucalyptus trees, which is sometimes hanging down in strips
Weini, the inner fresh bark
Narda, the notch cut into the bark for climbing a tree
Waralya, Eucalyptus largiflorens
Malinya, " salmonophloia
Kararda, " incrassata
Dalbarra, " sp.
Dang, " sp.
Gungurru, " cæsia

The roots of this Eucalypt are eaten. Probably also those of some of the others. Many of these Eucalypts yield a deal of water from some of the roots. The blacks know well how to chose the right roots at once, and must know certain marks about the tree to guide them, which, however, I could not get explained. I found some roots myself that yielded water, but found them by accident rather, because a number that I dug up yielded none.

Medduru, Callitris verrucosa
Bulgar, Myoporum platycarpum
Dumbai, Santalum acuminatum
Yogo, Brachychiton Gregorii
Karbabi, Alyxia buxifolia
Warril, Beyeria viscosa
Daryet, Eremophila alternifolia
Beddula, Acacia Meissneri
Yauwilli, " leiophylla
Murrun, " sp. (raspberry jam wood)
Mori, Daviesia aphylla
Burdanni, Pluchea conocephala
Malloiyi, Atriplex nummularium
Biul, Melaleuca sp.
Bugai, "
Dail, Scævola oxyclona
Nurgu nurgu, Thysanotus Patersoni
Gundulli, Grevillea Helmsiana

Red flowering, with decumbent branches.

Guru, Billardiera cymosa

The fruit of this plant is eaten by the aborigines. Between the Fraser Range and coast, I am told, the plant occurs abundantly in places.

Gnora, the resin of Xanthorrhea
Woia, a salt lake (Lake Lefroy ?)

Vocabulary of the Yunga Dialect obtained from a Native named Wainbret.

Parts of the Human Body.

Bardok, name given by the Yunga to the tribes living inland.

These circumcise and slit the urethra, which the Yungas do not.

Djabbin, circumcision
Paiyan, the slit, and slitting, of the penis
Yunga, man
York, woman
Kulong, boy, little fellow
Bindi, young woman, virgin
Nuggal, girl, daughter
Mammau, father
Iūgun, sister
Gnangan, mother
Gnundun, brother
Bidding, son

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Demman, grandfather
Mäön, grandmother
Kad, head
Pāb, forehead
Gnoanda, hair
Miel, eye
Miel biggard, eyelid
Miel gnoand (verb.), eye-hair, eyebrows, and lashes
Dwunga, ear
Mulla, nose
Tā, mouth
Min, lip
Gnallok (also sometimes Gnälok), teeth, jaw
Gnenok, beard
Gnanber, chin
Munk, shoulder
Wurrnok, upper arm
Gnoi, elbow
Marrak, lower arm
Mar, hand and fingers

This seems simply an abbreviation of Marrak.

Pieri, nails of fingers and toes
Yid, chest
Kurpul, belly
Goad, navel
Gnōlorr, back
Tauel, thigh
Purnith, knee
Marta, lower leg
Wullit, calf of leg
Yen, foot
Bilgut, knuckle of ankle
Tand, heel
Meid, penis
Teid, vagina
Biggot, skin
Gnoap, blood
Kurrak, veins
Kurd, heart
Waggar, lungs
Maia, liver
Tiub, kidney
Mūr, seat
Kwud, wound

Various Objects and Terms.

Woalu, heaven
Gnanga, sun
Wial, moon
Warrit, star
Mārr, cloud
Niurrdong, rainbow
Kepi, rain
Kepi mamma, thunder
Wirgu, lightning
Morruk, north
Mannong, east
Gnaddi, south
Winnung, west
Wammongat, ocean

Abbreviation Wammong, which is generally used.

Pudyar, land, earth
Poi, rock
Karda, hill, mountain
Kepi (abb. Kep., Gep.), water
Karla, fire
Puya, smoke
Kein, one
Kudjin, two
Marding, three
Purring, four
Gumbar, ten (two hands)
Bardek, many
Kawan, plenty
Gnan, I
Guindok, you
Ball, he, she, it
Gnuppilong, red
Daond, white
Turdong, green
Nuggal, small
Mulgan, cold
Yekla carrang, it is hot
Jummíngin, to see
Kárdidyin, to hear
Perangin, to feel
Kwūbātak, to taste
Mūngull, to fly
Murdigangul, to walk quick, run
Guaning, to eat
Kedji, spear
Kaili, boomerang

Zoological Terms.

Weid, emu
Kuli, turkey (Otis australis)
Gnaond, feather

Botanical Terms.

Buna, tree
Baddaich, big tree
Yubal, bark
Noal, flower
Pial, leaf
Willora, quandang (Santalum acuminatum)
Darrul, Exocarpus aphylla
Pindan, Geijera parviflora
Bindalla, Alyxia buxifolia
Galgulla marpu, Cynanchum floribudum

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Markauy.ndi, Dodonæa microzyga
Kummenok, Gastrolobium bilobum
Parka, Gastrolobium sp.
Mindiit, Cassia eremophila
Wiwurra, Aster sp., shrub
Yandi, Helichrysum apiculatum

Vocabulary obtained at Knutsford, W.A.

Kapun bordu, man
Mirga, woman
Kauwan, boy
Mula, girl
Minya, baby
Kada, head
Gnalla, forehead
Kada warna, hair of head
Mel, eye
Mel gnambu, eyebrow
Mel gnamba, eyelashes

Had these terms several times repeated to me, and on each occasion the distinction was made.

Nangu, beard
Muni, moustache
Tga, lip
Yeri, teeth, incisors
Gnalli gnalli, teeth, molars
Mulla, nose
Kayan, ear
Yalgu, blood
Mandatte, veins
Molla, heart
Gnanbukka, lungs
Gnurna, arm
Gurgun, elbow
Maia, Munyurdu, fingers
Benyi, nails of fingers and toes
Tyundu, sun
Piya, moon
Bungu, star
Gnalla (*vide* Gnalli above), to eat
Woda, to spit
Nulbu, to sneeze
Kutta, one
Kutarra, two
Mangurru, three
Wilarra, four
Wilarroa, five

After this my informant compounded the numbers, but the counting was getting somewhat confused.

There seems to be very little difference between Wilarra and Wilarroa, but this distinction was made each time I had the words repeated.

Wolanna, boomerang
Wila, the flat side of the boomerang
Yurdu, the convex side of the boomerang

These distinctions of the shape of this implement are very interesting. There seemed to me also some special terms for the twist and bend of it, but I could not get at the correct meaning of it.

Vocabulary obtained at Yaurigabbi, W.A., from a Native called Kuma, who came from the country lying further to the east and which he called Yolla.

Parts of the Human Body.

Murdyi, blackfellow
Yemmayi, man
Midji, woman
Gudja, boy
Mugga, head; also hair of head
Nulla, forehead
Kula, eye
Mull (abb. of Mulla?), nose
Kulga, ear
Augu, whiskers
Yira, jaw
Niinga, neck
Eri, teeth
Gallan, tongue
Bilan, chest
Bilgi, upper arm
Nuran, elbow
Jilli, forearm
Marra, hand, fingers
Mammarra, thumb
Tunda, thigh
Yungul, hip
Gunna, seat
Mambu, leg
Judda, knee
Jinna, foot, toe
Mamma adra, big toe
Warri, belly
Mairi, liver
Bunda, kidney
Kurdudu, heart
Yalgu, blood
Gumbu, urine
Karnu, fat
Wilu, penis
Wila, vagina
Yiga, bone

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Kálleya, small wound, scratch
Warella, spear-wound
Wilu, circumcision

This word signifies also penis, and it is likely that there is another word to be attached to this which Kuma perhaps did not know, although he asserted that there was not.

VARIOUS OBJECTS AND TERMS, &c.

Garong, sun
Wila, moon
Bundarra, star
Munduda, cloud
Burne, land
Kapi (Gabbi ?), water
Kulla, fire
Windya, wind

This word sounds remarkably like corrupted English, which I take it to be, although assured to the contrary.

Doui, hot
Murdi, cold
Burang, good
Dadda, bad
Wumma, eating ; to eat
Gulyi, to be hungry
Dabingalla, drinking ; to drink
Nōă, to see ; seeing
Nugarri, to stand ; standing
Niin, to sit ; sitting
Mulla, to kill ; killing
Gudia, one
Gudarra, two
Mangu, three
Gudaguda, four

This evidently means two twos.

Yalba, five
Kedji, spear
Meru, spear-thrower
Murda, stone
Murlu, kangaroo
Muban, dog
Yallabi, emu (Dromaius Novæ Hollandiæ)
Kara, crow
Waida, hawk
Burdura, turkey (Otis australis)
Gnau, egg
Bibin, nest
Milu, lizard (Egernia depressa)
Bunga, Veranus sp.
Kurrunguru, lizard (Amphibolurus barbatus)
Wunnayilinga, scorpion
Minga, ant
Gurragurra, fly
Winda, a tree

VOCABULARY OBTAINED FROM SEVERAL BLACKS OF THE MURCHISON TRIBES.*

PARTS OF THE HUMAN BODY.

Mugga, head
Kullawell, hair of the head
Gnangun, beard
Mullangun, moustache
Mimmindyi, eyebrows and eyelashes
Kurra, eye
Mulla, nose
Gulga, Kulga, ear
Nalgura, cheek
Dallin, mouth, tongue
Wurdi, lip, tongue
Wilga, teeth
Pidderi, shoulder
Wardu, back
Gnarka, chest
Kardi, upper arm
Gnungor, elbow
Yamma, lower arm
Marra, hand
Walgur, wrist
Nilgil, fingers
Mamurdura, thumb
Mindi, finger nails
Bebi, breast
Minni, teats
Warri, belly
Wilo, penis
Guldo, scrotum
Muni, vagina
Nundi, seat
Tunda, thigh
Burru, knee
Mambu, leg
Walla dargum, ankle
Yinna, foot
Dungul, heel
Yinna warri, sole of foot
Nilgil, toes
Mamurdura, big toe
Milga, Kurdudu, Gurdudu, heart
Doru, lungs
Máreri, Bigan, liver
Bonda, kidney
Wari, stomach
Wilgu, intestines
Billa, fat

* A portion of this Vocabulary was lost.

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Yalgu, blood
Kordilari, circumcision
Gnār, slit of the penis
Pika, wound

VARIOUS OBJECTS AND TERMS.

Kaianyu, sun
Banna, earth
Babba, water
Babba wanyi, rainwater tumble down
Wanyi, tumble down
Kulba, spear
Biakka, Cacatua los
Wullää, pigeon (Ocyphaps lophotes)
Maka, horn
Dyilgaru, Hakea Preissii
Ulurbi, Hakea sp.
Meru, spear-thrower
Kaudi, the sharp piece of stone fastened at the end of the Meru
Parru, the cement to fasten the stone

Resin of Xanthorrhea mixed with sand and dust.

Pimbu, the hook of the Meru
Galga, barb of spear
Yëi, head of spear
Wardu, native willow (Pittosporum phillyroides)
Burdärk, Acacia sclerosperma
Dunna dunna, Plagianthus Elderi

DESCRIPTIVE VOCABULARY OF SOME OF THE WORDS IN USE OF ABORIGINES LIVING ROUND THE SOUTH-WESTERN COAST OF WESTERN AUSTRALIA, mainly obtained through the assistance of C. A. Paterson, Esq., at Perth.

Mamma guārna, the almighty

Verb, father of all. Mamma implies something high, lofty, or sublime. Ex., Kotta mamma, a high hill, mountain. Kotta also implies always something elevated, head, hill. A native if asked whether it was true what he has stated will answer, Bunna, true. If the question is repeated, as if his word was doubted, he would probably say, Kummijie, very true (often contracted to Kum). If still doubted, he will solemnly say, Mamma kallidj, father understands.

Jingi, or Jinki, the evil spirit or fear-inspiring being, something akin to our devil

When cattle were first introduced the natives called them Jingiringi, from the great fear these horned beasts inspired them with. This word is now corrupted into Yongerunga.

Budyara, ground, earth, sand, land
Up, place

Used as an affix. All names of places to the south of Perth end in the syllable of *up* (place). Pinjarra should be written Pinjarrup, Mandurah be Mandurup, &c. In the eastern districts, as far inland as Beverly, and perhaps further, the ending *ain* (often spelt ine) is equivalent to *up* of the southern and coastal tribes. If a black were asked, Gnun up nyun budyara? (What place your ground? [Where do you come from?]), his answer would be Daldalup, Daldal place, or whatever other up he might come from.

Wulnar, sea
Darabal, estuary
Belu, river
Gnunga, sun, star

A day is expressed by "a sun." If a native wishes to say two days, he says, Kuyal gnunga (two suns). The time of the day he describes by the position of the sun. If he, therefore, makes an appointment, he will point in the direction where the sun will be at the time, and expresses himself thus, Gnunga alli gnaitch yul (Sun there I come). The blacks have a correct knowledge of the cardinal points of the heavens.

Yiral, North
Buyal, South
Gungal, East
Wurdal, West
Mikki, moon
Marr, clouds, wind, heaven
Muko, rain
Gabbi, water
Karla, fire
Munark, heat, hot
Munark kabullara, very hot

Bulla means many or a lot, and the prefix and affix seems to be joined to the word to give it more emphasis.

Kurrajil, cold

The r's are much rolled in this word, implying the derivation of it from shivering and chattering of the teeth.

Buyi, stone.
Bunnu, tree, also a stick, or wood
Kibera, ship
Maorain, food as a general term
Dadger, flesh food, including fish
food—special term

A black asking for food, says, Gnun marrain gnaitch gnung (You food me give) If bread is offered, and he wants meat, he says, Gnaitch dadger yulup (I flesh hungry).

Maia, native hut

Applied to house (?)

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Mammarup, man

Evidently "father of a place," which may imply "the owner of the soil," although no land is owned by individuals, as all is tribal property. The *r* is interpolated to make the word easier to pronounce.

Gnungna, black man
Genga, white man
Yakko, woman
Mamma, father
Mame, mother

This word sounds very like that for father, but is not pronounced with the same emphasis, wherein the main difference lies. It is also used as parent in the general sense.

Gnungan, mother
Kardu, wife or sweetheart

Only applied to white man, but sometimes used when speaking about themselves when endeavoring to explain their relationship to the whites. There are no special terms for husband and wife in the black's language. The man speaks of his wife as his woman—Yakka; and the woman of her husband as her man—Mammarup.

Kulong, child of either sex
Katta, head or hill
Chua, hair

General term also, as well as the twisted string made of it.

Mel, eye, to see, seeing
Mulya, nose
Bulbira, piercing of the nose
Twonga, ear
Da, mouth, lips
Nalgo, teeth, to eat, eating
Gnaitch marrain nalgo, I, food eaten
Dallang, tongue
Gnurnga, beard
Wardu, throat
Bugal, back
Munga, shoulder
Marra, arm
Mara gnunga, fingers
Biri mara, finger-nails
Marraga, hand and fingers
Minga, chest
Gnundu, man's breast
Bibbi, woman's breast, teats
Ngambarn, tattoo scars, tattooing
Kurt, heart
Daragarl, lungs
Chupu, kidney
Gobbel, stomach, belly

This word is evidently adapted from the rumbling noise in the stomach, of which the blacks so frequently are troubled with when they are short of food.

Murnu, seat
Gndlyara, anus
Tyundu, Mida, penis
Yadyu, testicles
Djidji, semen
Dardi, vagina
Mūyong, sexual connection

This word illustrates the motion of the act, and is generally repeated. Example, Gnaitch alli yakko bulla mūyong! mūyong! (I that woman much, &c.).

Gumbu, urine
Gūāna, excrement
Bal guana dabbat, the excrement left or dropped
Daual, thigh
Daual gidgi, spearing the thigh
Matta, leg
Burnich, knee
Yinna, foot
Yinna gnunga, toes
Biri yinna, toe-nails
Gnaitch, I, my, mine, what

Ex., Gnaitch yinna, my foot; Gnaitch niura kwilla, what your name?

Gninnoug, thou, thy, thine

Generally abbreviated to gnin.

Bal, he, she, it, his, &c.
Kwabba, good
Windu, bad
Boyera, wicket
Bunno, true
Kwibbel, untrue, untruth, to steal, doing something unfair
Mindich, sick, ill, out of order
Kattidjbust twonga mindich, understand not, ear sick

If a black cannot or will not understand.

Kattidj, understand
Bust, not
Nalgo mindich, toothache
Wardu mindich, sore throat
Gobbel mindich, stomach ache, &c.
Dwarda, dog
Yokkain, dingo
Yauart, large male kangaroo
Warru, large female kangaroo
Kardok, yearling male kangaroo
Kauart, yearling female kangaroo
Gnunip, young kangaroo in pouch
Kupbardong, young kangaroo.

Kupbardoug means the young, or the youngest, and applies equally to men as well as other beings.

Kulong, younger (comparative)
Burngup, wallaby
Wallin, kangaroo-rat
Gumal, Gnulbon, opossum
Gumal chua, the twisted string made of opossum hair

Much used, but not prized like the chua of human hair.

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Wadji, emu

Often abbreviated to Wadj. Gnalyara wadj, anus of emu, is a gross insult to a black. They also do not like to be called Matta wadji, the leg of an emu; but Mal wadji, the eye of an emu, is the greatest compliment one can offer a native. The emu is highly valued by the natives on account of the food it yields in the shape of eggs, as well as flesh, and on account of the feathers, which are used as tufts on the head and for other ornaments. Besides that they are always put into the incisions to raise the tattoo scars.

Mulak, black cockatoo

Jilak, black magpie

Bibbilya, bustard

These three names are taken from the natural cries of these birds.

Kuljak, Malyi, swan

Kattarr, musk duck

Wunana, wild grey duck

Puttarlung, pelican

Nuna, black snake

Buyia, turtle

Gulgutta, mullet

Grurnan, Gumba, great, large, big

Nimap, small

Wuri, long

Kurat, short

Gnun, who, what

Winyi, or Winyal, where

A word frequently used.

Kaen (pron. cane), one

Kuyal, two

Bali kuyal, three

Bali bali kuyal, four

Bal means he, it, &c. Therefore Bal and Kuzal means it and two=three; Bal bal kuzal, It, it, and two. Beyond that everything is Bulla, many, a lot. From this it will also be seen that they have no special words for three or four. The affix of i to bal is for the purpose of producing a better sound, as is the frequent practice with the natives. *Vide* Kabullara.

Kwilla, name

Each native has a name, besides the tribal name, given to him by his parents, which is generally connected with something specially that is found or has occurred at his place of birth. They will often change names with one another on great occasions, as a token of friendship, and are very proud to be permitted to do so with well-known white men, by which means they acquire some prominence among their own people, and at the same time prefer their fidelity upon the white.

Kaili, boomerang

Dauark, a solid round stick, slightly curved, and about 1 ft. 10 ins. long, slightly notched at one end for a handle

This is used for throwing at small game. The blacks are very expert with this weapon, and throw it vertically to make it jump off the ground, and turn from tip to tip. By this means they are able to kill a quail when the bird is just rising.

Gidji, spear, to spear, to penetrate, to pierce

Also used figuratively. If, for instance, a native observes a clandestine coition, he may express himself in this way—Gnaitch mel alli yakko kwibble gidji. I see that woman steel spear. (*Vide* Kwibble and notes on adultery.)

Miyir, Miro, the lever for throwing the spear

Wunda, shield

Dulyung, feast

Kakkarra, dancing after a feast

Bukal, the grave

EXPLANATIONS OF PLATES.

Plate.

VIII. Boy of Fraser Range tribe.

IX. Rock-paintings at Arcoeillinna rock-shelter.

X. Rock-paintings near Wa-wee waterhole, and marks on rock-surface near waterhole in cleft at Camp 12.

XI. Rock-paintings in rock-shelter near Mount Illbilie Soakage.

XII. Rock-paintings on face of sandstone-escarpment, situated about 30 miles south from Camp 4.

XIII. Rock-paintings on flat face above rockhole, situated about five miles south-west from Camp 5.

XIV. Fig. 1, *mira-nakata*, Everard Range tribe; fig. 2, *meru*, Hampton Plain; figs. 3 and 4, *mero*, Murchison District; fig. 5, *chisel*, Murchison District; figs. 6 and 7, *throwing-sticks*, Murchison District; fig. 8 ———?, Murchison District.

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XV. Fig. 1, *yindinga*, Fraser Range; fig. 2, *kondell*, Fraser Range; fig. 3, *unain*, Fraser Range; fig. 4, *talla* (two views), Fraser Range; figs. 5 and 6, *balga*, Fraser Range; fig. 7, *bone-awl*, Murchison District; fig. 8, *bone nose-stick*, Murchison District.

XVI. Figs. 1, 2, and 3, *wormas*, Murchison District; fig. 4, *spear-head*, Everard Range; fig. 5, *spear-head*, Murchison District (this kind of spear is used by all tribes from Everard Range to the Murchison District); fig. 6, *moya*, Fraser Range.

XVII. *Yilbars*, Murchison District.

XVIII. *Shield*, Murchison District.

XIX. Game-trap, seen near rocky hill, about four miles from Camp 6.

XX. Markings on chest of natives from the Blyth Range, Barrow Range and Victoria Desert tribes.

XXI. Male of Everard Range tribe, showing hair tied up.

XXII. Male of Barrow Range tribe, showing markings on chest, and having the hair burnt off in front.

XXIII. Male of Barrow Range tribe, showing chest decorations, and having the hair singed off.

XXIV. Male of Victoria Desert tribe, showing decorations, &c.

XXV. Male of Victoria Desert tribe, showing covering to the penis.

XXVI. Male of Fraser Range tribe, showing fur of certain marsupial tails in beard and hair.

XXVII. Male of Fraser Range tribe, with *yindinga* and *kondell*.

XXVIII. Female of Fraser Range, depicting the method of carrying a child.

XXIX. A group of Barrow Range natives, returning thanks for gift of meat at camp near Mount Squires.

XXX. A wurlie, with three males of the Everard Range; the middle and right figures with a roll of tobacco between their lips; also wooden *mikas*.

XXXI. Three young males of the Everard Range tribe.

XXXII. Group of men of the Blyth Range tribe, sitting.

XXXIII. Group of men of the Blyth Range tribe, standing.

XXXIV. Young male of the Fraser Range tribe, not yet circumcised.

XXXV. Adult male of the Fraser Range tribe.

XXXVI. Six-fingered female, Fraser Range tribe.

XXXVII. Group of women, Fraser Range tribe.

XXXVIII. Mother and son, the woman showing child-bearing marks, Hampton Plain tribe.

XXXIX. Adult male of the Hampton Plain tribe.

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BOTANY.

(PHANEROGAMS AND VASCULAR CRYPTOGAMS).

By Baron F. von MUELLER, K.C.M.G., M.D., F.R.S., &c., and Professor RALPH TATE.

Despite the fact that a very large tract of the country traversed by the Elder Exploring Expedition had been previously investigated for its botany, the collection made by Mr. Richard Helms, the Naturalist to the Expedition, assisted by his colleagues, contains a relatively large number of new species, has considerably augmented the list of West Australia plants and furnished material for the better definition of some species hitherto incompletely described.

The numbers of new species are for South Australia one (*Capsella villosula*), and for West Australia eighteen.

The addition to the South Australia flora is one (*Cyperus laevigatus*), in addition to the new species.

The additions to the list of species inhabiting the Province of West Australia, less those descriptively new, are the following thirty-five:—With two exceptions, *Canthium oleifolium* and *Schoenus aphyllus*, all are characteristic Eremian plants having their metropolis in the dry interior of South Australia; *Kennedya prorepens*, *Anthobolus exocarpoides*, *Tecoma australis*, and *Eriachne scleranthoides* are saxatile species of the basin of the Upper Finke, extending to the botanical outlier of Barrow Range; the low-land species, *Phyllanthus lacunarius*, *Polycarpaea Indica*, *Euxolus Mitchelli*, *Brachysema Chambersi*, *Acacia patens*, *Didiscus glaucifolius*, *Podolepis canescens*, *Helichrysum Ayersi*, *Solanum Sturtianum* and *Teucrium grandiusculum* extend beyond the confines of South Australia to Cavenagh and Barrow Ranges; but *Stenopetalum velutinum*, *Euphorbia erythrantha*, *Thryptomene Maisonneuvii*, *Helipterum Fitzgibboni*, *H. stipitatum*, *Dicrastylis ochotricha* and *Eremophila Gibsoni* reach into the Victoria Desert; whilst *Dodonaea filifolia*, *Saponaria tubulosa*, *Chenopodium rhadinostachyum*, *Muehlenbeckia polygonoides*, *Glycyrrhiza psoraleoides*, *Loranthus gibberulus*, *Helipterum Troedeli*, *Daemia Kempeana*, *Solanum eremophila*, *Teucrium sessiliflorum* and *Eremophila Paisleyi* extend to Fraser Range or a little beyond.

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The collection submitted to us contains about 800 species, but the material available has in many instances among the larger genera not been adequate for specific determination, hence the number of actually recorded species is only about 700. A few presumable novelties are reserved for further study.

Where no collector's name is appended to a geographic record, that of Mr. Helms is to be considered to have been omitted. The names of by-workers are however given, of these may be mentioned Mr. P. A. Gwynne, who collected from Fraser Range to Esperance Bay and to whose zeal we owe an interesting supplementary collection, and to Mr. D. Cumming, who accompanied Mr. Wells on a flying-survey from Annean Station on the Upper Murchison-river to the eastward as far as long. 124° 31′, and gathered 55 species, but of these only three are supplementary to the main collection.

The geographic positions of the recorded stations are indicated on the geological map accompanying this volume. The word "Camp" is generally abbreviated in the text of this report to "C," thus C. 22 stands for Camp 22.

DILLENIACEÆ.

HIBBERTIA GLABERRIMA, *F. v. M.* S.A., Everard Range, at 2,000 ft. elevation.

HIBBERTIA ROSTELLATA, *Turcz.* W.A., near Boorabin. The stamens are disconnected, but by gradual turgescence of the maturing fruitlets, may be pushed into clusters of threes, yet without forming real bundles by any concrescence of filaments. Ovularies occasionally only four. To judge from the very imperfect but authentic material in the Melbourne Herbarium, *Candollea uncinata*, Bentham, belongs to this species. The externally very similar *H. recurvifolia*, Bentham, has lately been found inland as far as Youndegin by Miss Alice Eaton, and near Parker's Range by Mr. Edwin Merrall.

Var. RECTIFOLIA. W.A., Victoria Desert (C. 59), on sandhills. This plant has almost straight or only slightly curved leaves, and with peduncles about as long as the calyx, but otherwise not different from *H. rostellata*; the mature carpels are smooth and shining, each with one ripe reniform seed. Precisely the same form was gathered in Giles' Third Expedition near Victoria Spring.

HIBBERTIA GLOMERATA, *Bentham.* W.A., between Red Hill and Yilgarn.

HIBBERTIA HUTTII, *F. v. M.* W.A., between Red Hill and Yilgarn.

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LAURACEÆ.

CASSYTHA GLABELLA, *R. Brown.* W.A., near Karoling.

CASSYTHA MELANTHA, *R. Brown.* W.A., Victoria Desert (C. 56).

CAPPARIDEÆ.

CLEOME VISCOSA, *Linné.* S.A., Warrina. W.A., C. 24; lat. 27° 5′, long. 119° 15′ (D. Cumming).

CRUCIFERÆ.

SISYMBRIUM TRISECTUM, *F. v. M.* S.A., Cootanoorina; Upper Arkaringa Creek, with large white flowers; W.A., Fraser Range.

SISYMBRIUM NASTURTIOIDES, *F. v. M.* S.A., Cootanoorina; Arkaringa and Upper Arkaringa Creeks.

ERYSIMUM BREVIPES, *F. v. M.* S.A., Arkaringa Creek; W.A., Fraser Range.

ERYSIMUM BLENNODIA, *F. v. M.* S.A., near Arkaringa Creek.

STENOPETALUM VELUTINUM, *F. v. M.* A nearly glabrous variety, with shorter pedicels and pinnatifid leaves. W.A., Camps 53, 54; near Mount Squires; also at Pidinga, S.A. (R.T.).

STENOPETALUM LINEARE, *R. Brown.* W.A., Fraser Range.

STENOPETALUM SPHÆROCARPUM, *F. v. M.* W.A., 80 miles south of Victoria Spring (C. 64).

MENKEA SPHÆROCARPA, *F. v. M.* S.A., Cootanoorina and Arkaringa Creeks. Some of the plants have white petals. The fruits are too young for determining absolutely the specific position. Mr. Merrall has sent this species from the vicinity of Parker's Range; pedicels occur hardly twice as long as the matured fruit.

CAPSELLA COCHLEARINA, *F. v. M.*, var. OCHRANTHA. S.A., Arkaringa Valley.

CAPSELLA VILLOSULA, *sp. nov.* S.A., Arkaringa Creek. Annual, dwarf, erect; much beset with simple, very spreading hairlets; leaves nearly all radical, broad-linear or narrow-elliptic, but gradually attenuated into the petiole, entire, or some slightly denticulated, always blunt; flowers corymbosely crowded, "emitting a perfume like hawthorn, mixed with heliotrope;" pedicels soon longer than the flowers; sepals spreading, outside pilosulose; petals bright-yellow, longer than the calyx; anthers yellowish, ellipsoid recurved; style conspicuously longer than the stigma; ovulary pubescent; fruit small, ellipsoid-oval, lobeless; the valves boat-shaped, the septum in the narrow diameter; two or three seeds in each cell. From two to five inches high. Stem usually simple. Radical leaves to one and a half inches long and quarter-inch broad, less pubescent than the stem and pedicels; stem-leaves diminutive, usually narrow, often undeveloped. Petals hardly one-eighth inch long, elliptic-cuneate. This species stands

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nearest to *C. Andreana*, but differs in much longer hairlets, in almost leafless stem, in larger radical leaves, in color and size of petals, in anthers proportionately less broad, and in conspicuity of style.

LEPIDIUM PHLEBOPETALUM, *F. v. M.* S.A., Cootanoorina and Arkaringa; W.A., Victoria Desert (C. 53), Victoria Spring.

LEPIDIUM PAPILLOSUM, *F. v. M.* S.A., Cootanoorina, Arkaringa; W.A., near Mount Squires.

Lepidium leptopetalum has been sent by Mr. Streich from Nannine, Murchison Gold-field, W.A.

VIOLACEÆ.

HYBANTHUS FLORIBUNDUS, *F. v. M.* W.A., Victoria Desert (Camps 57, 58), Fraser Range.

HYBANTHUS ENNEASPERMUS, *F. v. M.* S.A., near Arcoeillina-Well; W.A., near Mount Squires.

PITTOSPOREÆ.

PITTOSPORUM PHILLYROIDES, *DeCand.* S.A., Upper Arkaringa Valley. "A tree of exceptionally fine growth, attaining to a height of 30 feet, with a trunk of 12 inches in diameter and of about five feet to the branches. It resembles a weeping-willow, and covers an area of 20 feet diameter." W.A., 30 miles S.S.W. from Mount Watson, Fraser Range and Murchison district.

Var. Young foliage silky-pubescent, leaves shorter, broader, obtuse, and stiff; a small tree up to 15 feet high. S.A., Upper Arkaringa Valley.

BURSARIA SPINOSA, *Cavanilles*, var. INCANA. W.A., near Lake Deborah. "A shrub 10 to 12 feet high."

MARIANTHUS LINEATUS, *F. v. M.* W.A., Victoria Desert (C. 54, 64). "Climbing 8 to 12 feet on mallee."

SOLLYA HETEROPHYLLA, *Lindley.* W.A., Mount Ridley, between Fraser Range and Esperance Bay (P. A. Gwynne). The fruit, called "gurnu," is eaten by the natives of Hampton Plain (D. Lindsay).

ELATINEÆ.

ELATINE AMERICANA, *Arnott.* W.A., between Red Hill and Yilgarn.

HYPERICINÆ.

HYPERICUM JAPONICUM, *Thunberg.* W.A., between Red Hill and Yilgarn.

POLYGALEÆ.

COMESPERMA SCOPARIUM, *Steetz.* W.A., Warangering.

COMESPERMA INTEGERRIMUM, *Endl.* W.A., Quardanoolagin near Yilgarn.

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TREMANDREÆ.

TETRATHECA EFOLIATA, *F. v. M.* W.A., near Warangering.

RUTACEÆ.

BORONIA CŒRULESCENS, *F. v. M.* W.A., Victoria Desert (C. 54); between Red Hill and Yilgarn.

Variety. Branches very slender, branchlets subspinescent, and with very small and few leaves. W.A., near Warangering and 70 miles east of Mount Churchman.

ERIOSTEMON LINEARIS, *Cunningham.* S.A., Everard Range, at 3,000 feet, on granite.

ERIOSTEMON TUBERCULOSUS, *F. v. M.* W.A., near Victoria Spring (C. 59).

Leaves proportionately broader than usual. This is the true *Phebalium microphyllum* of Turczaninow, as is clear from the original description, but the specific name given by him was preoccupied in the genus Eriostemon for the *P. brachyphyllum* of Bentham, from near the Southern shores of St. Vincent's and Spencer's Gulf. The *Phebalium tuberculosum* of Bentham seems to have always the leaves longer and narrower, with their margin involute instead (as in the genuine *E. tuberculosus*) revolute. It is however sometimes difficult to perceive this, as a slight twist of the very short petiole would reverse the surface of the leaves. This particular plant, with almost terete and channelled leaves, was collected during Giles' third expedition towards Ularing. Drummond's specimen has some of the leaves fully one inch long. The species has now received the name *E. canaliculatus.* To this plant was referred in the Fragm. Phytogr. Austr. IX., 108, by a note under *E. filifolius.*

PHILOTHECA HASSELLI, *F. v. M.* W.A., Between Red Hill and Yilgarn.

GEIJERA PARVIFLORA, *Lindley.* W.A., near and at Fraser Range.

ZYGOPHYLLEÆ.

NITRARIA SCHŒBERI, *Linné.* S.A. Cootanoorina.

"A shrub 2 to 3 ft., fruit red."

ZYGOPHYLLUM APICULATUM, *F. v. M.* W.A., Victoria Desert (C. 59).

ZYGOPHYLLUM GLAUCESCENS, *F. v. M.*, small-flowered variety. S.A. Cootanoorina.

ZYGOPHYLLUM IODOCARPUM, *F. v. M.* S.A. Cootanoorina.

ZYGOPHYLLUM AMMOPHILUM, *F. v. M.* S.A., Camp 22.

ZYGOPHYLLUM FRUTICULOSUM, *De Candolle.* W.A., a small-flowered variety, with some fruits ripening, only one seed; Victoria Desert (C. 54).

Var. AURANTIACUM, *F. v. M.* S.A., Warrina.

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TRIBULUS TERRESTRIS, *Linné*. S.A., Warrina (C. 11); W.A., near Mount Squires.

TRIBULUS HYSTRIX, *R. Brown*. S.A., Warrina.

If *T. occidentalis*, R. Brown, can be upheld as a distinct species, then the Warrina specimens belong to it—having the large petals (one inch or more long), numerous leaflets (9 to 12) and subulate spines on the fruit, which are attributed as distinctive characters by Mr. Bailey. But a re-examination of copious material confirms the decision arrived at, and promulgated by one of us (F. v. M.) in the Essay on the Babbage-plants, and subsequently adopted by Bentham, that *T. occidentalis* has no claim to specific rank; an analagous case is with *T. cistoides*, which represents a large-flowering state of *T. terrestris*.

The following localities of *T. hystrix*, as represented by authentic specimens in our herbaria, serve to define the geographic distribution of this characteristic Eremian plant:—

N.W.A., Yule Gorge, Pyramid and Sherlock Rivers (Hon. Sir J. Forrest); Roebuck Bay (A. Forrest); Dampier Archipelago (Walcott, Hughan); Port Walcott (Harper) and interior from Nichol Bay (F. Gregory); Fortescue River (Carey, also J. Forrest); Gascoyne River (Bunbury, Survey Exped., also J. Forrest); Menilyalka River (J. Forrest). C.A., Barrow Creek (Chandler); MacDonnell Range (Flierl); Rawlinson Range (E. Giles); Lake Amadeus (E. Giles); Finke River (R. E. Warburton, McDougall Stuart); Eyre's Creek (Kayser); Cooper-Creek (Howitt, also McLeod); Stevenson Creek and Charlotte-Waters (Dittrich); towards Spencer-Gulf (Warburton), Strangway-Spring (Dr. Cleland).

TRIBULUS MACROCARPUS, *F. v. M.* W.A., near Mount Squires.

TRIBULUS PLATYPTERUS, *Bentham*. W.A.; lat. 26° 49′, long. 123° 30′ (D. Cumming).

GERANIACEAE.

ERODIUM CYGNORUM, *Nees*. S.A., Cootanoorina, Arkaringa Valley; also at these localities a variety with pinkish flowers and slightly lobed leaves; Everard Range. W.A., Fraser Range.

OXALIS CORNICULATA, *Linné*. S.A., Arkaringa Valley; W.A., Fraser Range; native name, "*mulda mulda*."

MALVACEÆ.

LAVATERA PLEBEIA, *Sims*. W.A., Victoria Spring, Fraser Range.

MALVASTRUM SPICATUM, *A. Gray*. S.A., Arkaringa Valley, Mount Watson.

PLAGIANTHUS DIFFUSUS, *Bentham*. W.A., near Hunt's Well, Hampton Plains. Leaves seemingly never much cuneated, in the

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present specimens blunt or rounded or even cordate at the base; the crenulation often extending all round. The *P. densiflorus* (Edm. Baker, in Britten's Journ. of Bot., XXX., 72) is more closely related to *P. glomeratus*. Mr. Isaac Tyson found it also on the Upper Murchison River. Calyx-lobes shorter than the tube. Petals almost scarious. Anthers at first pure white, finally yellowish. A more glabrous form was collected by F. v. M. at Hamelin Harbor.

PLAGIANTHUS BERTHÆ, *F. v. M.* Near Fraser Range (C. 68), only the pistillate plant. A fragment of this species occurred in James Drummond's collection. It is now also known from Parker Range (Merrall), Katanning (Mrs. M. Heal), towards Lake Lefroy (Cronin). In South Australia this plant is usually more glabrous, and its flower-stalklets are more elongated.

PLAGIANTHUS HELMSII, *spec. nov.* W.A., Lake Lefroy; Murchison district; native name, "*dunna-dunna.*" Also Lake Annean (Mr. S. Dixon, 10/'93).

Stem robust, branchless or few-branched, all over closely beset with fascicles of minute, mostly oval lanceolar, pale-lepidote, somewhat canaliculate leaves; stipules conspicuous, truncate or outward acuminate, ciliolate, adnate to the broad petioles; flowers very small, each solitary, sessile within a leaf-fascicle; calyx lepidote, almost semiellipsoid, but its lobes extremely short; petals delicately membranous, glabrous, extensively transparent, almost colorless or brownish towards the summit, less than half-exserted; staminal column very short, anthers whitish, not numerous (pistillate flowers and their fruits unknown).

This shares with *P. microphyllus* in the characteristics of leaves and flowers, but with *P. spicatus* in the simple manner of growth. The leaves are quite entire, often folded from the sides inward, and sometimes arched-curved.

SIDA CORRUGATA, *Lindley.* W.A., Mount Squires, Fraser Range. Var. PEDUNCULATA, S.A., Arcoeillina Well.

SIDA INTRICATA, *F. v. M.* S.A., Nilpena.

SIDA VIRGATA, *Hooker.* S.A., between Nilpena and Cootanoorina.

SIDA CALYXHYMENIA, *J. Gay.* S.A., Arcoeillina Well; W.A., Camp 61, Fraser Range; lat., 27° 3′, long., 124° 6′ (*D. Cumming*).

SIDA PETROPHILA, *F. v. M.* S.A., Upper Arkaringa Valley; West from Wawee waterhole; Everard Range at 3,000 feet; Peculiar Hill (C. 15).

ABUTILON TUBULOSUM, *Hooker.* S.A., Warrina; near Turner Hill (C. 10); Peculiar Hill (C. 15).

ABUTILON CRYPTOPETALUM, *F. v. M.*, variety with large white petals. W.A., Victoria Desert (C. 53).

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ABUTILON OXYCARPUM, *F. v. M.* S.A., Arkaringa Creek. W.A., Fraser Range.

ABUTILON FRASERI, *Hooker.* W.A., near Mount Squires.

ABUTILON HALOPHILUM, *F. v. M.* S.A., Warrina; Arkaringa Valley.

HIBISCUS PINONIANUS, *Gaud.* S.A., Everard Range (leaves narrow-oblong, with or without basal lobes); Mount Goolwa (C. 6); Coffin Hill; Pingegurrina Hill; Birksgate Range (leaves orbicular, without lobes). W.A., Near Mount Squires; Victoria Desert (C. 53); 30 and 60 miles N.W. from Fraser Range.

HIBISCUS BRACHYSIPHONIUS, *F. v. M.* S.A., Warrina.

HIBISCUS KRICHAUFFII, *F. v. M.* S.A., Warrina.

HIBISCUS FARRAGEI, *F. v. M.* W.A., Fraser Range.

HIBISCUS STURTII, *Hooker.* S.A., between Arcoeillina and Wawee Waterhole; eastern edge of Everard Range.

HIBISCUS HAKEAEFOLIUS, *Giordano.* W.A., Fraser Range; about 36 miles N.W. of Southern Cross; 100 miles N.E. of Geraldton. "The flowers never open properly, and they seem to be fertilised by ants, which infest them in great numbers. The scent of the flowers is very pleasant, though faint, and resembles that of the tulip."

GOSSYPIUM STURTII, *F. v. M.* S.A., Everard Range; near Mount Watson; Mount Sir Thomas; C. 22.

STERCULIACEÆ.

BRACHYCHITON GREGORII, *F. v. M.* S.A., about 25 miles N.W. of Camp 9; a tree 40 feet high. W.A., near Skirmish Hill (Camps 26, 28), Victoria Desert (C. 49, C. 50, C. 62), 75 miles N.W. of Fraser Range, as a stunted tree; between Red Hill and Yilgarn. With the normal fruits collected at various places in the Victoria Desert are others nearly two inches long and much pointed, possibly indicating another species. "The inner bark of the stem and the bark of the roots are extensively chewed by the natives of Victoria Desert. There are thin layers of a glutinous substance between the layers of bark, with a taste like that of cocoa-nut. The seeds are roasted and eaten by the natives.

COMMERCONIA CINEREA, *Steudel.* W.A., near Yilgarn.

COMMERCONIA KEMPEANA, *F. v. M.* W.A., Victoria Desert (C. 40, C. 44), a shrub of one foot high.

COMMERCONIA MAGNIFLORA, *F. v. M.* In a varietal form with more acute calyx-lobes; moreover, the color of the calyx is reddish. S.A., near Mount-Ibillie soakage, a shrub from four to eight feet high; Everard Range, at from 2,000 to 3,000 feet elevation; Birksgate Range.

COMMERCONIA ROTUNDIFOLIA, *F. v. M.* A form with more oval leaves than the typical plant. W.A., near Lake Deborah.

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a shrub from two to five feet high; about 36 miles N.W. of Southern Cross.

COMMERCONIA MELANOPETALA, *F. v. M.* W.A., Victoria Desert (C. 54).

COMMERCONIA CRAUROPHYLLA, *F. v. M.* W.A., Victoria Desert (C. 54, C. 56, C. 61), near Fraser Range.

This species was originally described from specimens with only young flowers.

HANNAFORDIA BISSILLI, *F. v. M.* W.A., between Red Hill and Yilgarn.

SERINGEA INTEGRIFOLIA, *F. v. M.* W.A., Victoria Desert (C. 44, C. 45, C. 54, C. 57, C. 59), a shrub from one to three feet high; near Lake Deborah, on granite rocks, to about five feet high; lat. 26° 30′, long. 120° 52′ (D. Cumming).

EUPHORBIACEÆ.

CALYCOPEPLUS HELMSII, *spec. nov.* W.A., 36 miles N.W from Southern Cross. A shrub, branching from near the base to from 5 to 12 feet high; the stems have a diameter of from 1½ to 4 inches, the bark is longitudinally wrinkled; the young branches of one inch diameter have a grey, slightly and flatly longitudinally ridged bark. For description see Appendix.

EUPHORBIA ERYTHRANTHA, *F. v. M.* W.A., near Mount Squires; Victoria Desert (C. 53).

EUPHORBIA DRUMMONDII, *Boissier.* S.A., Nilpena; Cootanoorina. W.A., Victoria Desert: near Yilgarn.

EUPHORBIA EREMOPHILA, *Cunningham.* S.A., Cootanoorina; Arkaringa Valley. W.A., near Mount Squires; Victoria Desert (C. 53, C. 54).

PORANTHERA MICROPHYLLA, *Brong.* W.A., Karolin; Victoria Desert (C. 53).

MONOTAXIS GRANDIFLORA, *Endlicher*, var. OBTUSIFOLIA. W.A., Gnarlbine and Warangering. The only differences from the legitimate plant seem shortness and bluntness of the leaves, and although the calyx-lobes are less acute, this character is shown to be variable in Drummond's and Preiss's plants. The rudimentary pistil in the staminate flowers has been recorded by Nees.

MONOTAXIS LUTEIFOLIA, *F. v. M.* S.A., Yeelunginna Hill (C. 4), on granite. W.A., near Gnarlbine and Victoria Desert (C. 54).

MONOTAXIS GRACILIS, *Baillon.* W.A., near Gnarlbine.

BEYERIA VISCOSA, *Miquel.* W.A., *Var. angustifolia*, Fraser Range. "A shrub two to four feet high. By the natives of the Hampton Plain called *warril;* by those of the Fraser Range, *barru.*"

BEYERIA BREVIFOLIA, *Baillon.* W.A., near Lake Lefroy. "A shrub from three to five feet high."

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RICINOCARPUS VELUTINUS, *F. v. M.* W.A., Lake Deborah, a hrub three to five feet high; 30 miles N.W. from Southern Cross; 100 miles N.E. from Geraldton. The petals of the staminate flowers are somewhat longer than the calyx and more glabrous.

BERTYA DIMEROSTIGMA, *F. v. M.* W.A., Victoria Desert (C. 54, C. 59).

PHYLLANTHUS THESIOIDES, *Bentham.* S.A., Arcoeillina Well.

PHYLLANTHUS LACUNARIUS, *F. v. M.* W.A., near Mount Squires.

ADRIANA TOMENTOSA, *Gaudichaud.* W.A., Victoria Desert (C. 54), two feet high.

ADRIANA QUADRIPARTITA, *Gaudichaud.* S.A., Arkaringa Creek.

URTICACEÆ.

FICUS PLATYPODA, *Cunningham.* S.A., Arcoeillina, Upper Arkaringa Valley, Birksgate Range.

PARIETARIA DEBILIS, *G. Forster.* S.A., near Everard Range; W.A., near Mount Squires.

CASUARINEÆ.

CASUARINA CORNICULATA, *F. v. M.* W.A., near Boorabin, four to eight feet high.

CASUARINA GLAUCA, *Sieber.* S.A., Everard Range, five to twelve feet; near Ferdinand River, 30 feet. W.A., Victoria Desert (C. 53, 54), 25 to 30 feet.

These specimens include the ordinary desert form, and one with more slender branchlets.

CASUARINA HUMILIS, *Otto & Dietrich.* S.A., Everard Range; W.A., Victoria Desert (C. 56, two to five feet), near Fraser Range, near Gnarlbine (five to eight feet). Rudimentary leaves deltoid, not rarely six in a whorl (as stated by Miquel); strobile slightly sericeous.

Var. ? S.A., Moolalpinna Hill (C. 7). Has the foliage almost of *C. humilis*, but the whorls are mostly seven-denticulate, and the spikes rather long and quite slender; fruits unknown.

CASUARINA ACUTIVALVIS, *F. v. M.* W.A., Victoria Spring, 12 to 15 feet. Fruit-valves slightly carinate, they might be considered rather sepaline than bracteolar in some analogy with the staminate flowers, the envelope of which is considered bisepalous. The seed-like fruit of this species, inclusive of its terminating appendage, attains a length of rather more than half-an-inch, but it is narrow in proportion to its width.

CASUARINA BICUSPIDATA, *Bentham.* W.A., near Victoria Spring. Appendage of each fruit-valve long-exserted, subulate, slightly curved. Seed-like fruits, brownish-black outside. In the collection the strobiles of *C. bicuspidata* are mixed with

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others in which the fruit-valves are devoid of appendages, unless this should prove a variable characteristic; therefore, the accompanying flowering specimen may belong to another congener. The remarkable organisation of the anthers for fecundation, recently discovered by Dr. Treub, has subsequently also been discovered in some Amentaceæ; hence on that account the Casuarineæ need not be kept far distant from the Amentaceous order. Moreover, as regards foliage, we have in *Exocarpos* similar extreme diminution of the foliaceous organs along with the development of large leaves in *E. latifolia*. Furthermore, leaves as minute as in some cupressinous genera occur also in *Choretrum*, *Leptomeria*, *Tamarix*, *Calycothrix*, *Melaleuca*, *Styphelia* and many other genera with highly developed floral structure, though not connately decurrent.

SAPINDACEÆ.

Dodonæa viscosa, *Linné*. S.A., Arcoeillina, eastern edge of Everard Range, Everard Range; W.A., Barrow Range.

Var. attenuata. W.A., Hunt's Well, Hampton Plains.

Dodonæa lanceolata, *F. v. M.* S.A., eastern edge of Everard Range; W.A., Yenumba.

Dodonæa filifolia, *Hooker*. W.A., Victoria Desert (C. 40), "a shrub from three to four feet high." Known also from the Upper Murchison River (Weston).

Dodonæa lobulata, *F. v. M.* W.A., Victoria Desert (40 and 60 miles south of Victoria Spring); lat., 27° 53′, long., 123° 45′ (D. Cumming).

Dodonæa hexandra, *F. v. M.* W.A., 85 miles N.E. by E. from Esperance Bay (P. A. Gwynne).

Dodonæa microzyga, *F. v. M.* S.A., Arkaringa Valley, Camp 4, and forty miles south of Camp 4.

Variety. W.A., Fraser Range, native name, *marganyindi*.

Dodonæa stenozyga, *F. v. M.* W.A., Victoria Desert (40 and 60 miles South of Victoria Spring); near Fraser Range.

FRANKENIACEÆ.

Frankenia lævis, *Linné*. S.A., Cootanoorina; near Ferdinand River. W.A., 56 miles N.W. of Fraser Range; near Hunt's Well, Hampton Plains. Collected in various varieties.

Frankenia tetrapetala, *Labill.* W.A., Camp 64; Southern Cross.

PORTULACEÆ.

Portulaca oleracea, *Linné*. W.A., near Mount Squires.

Claytonia polyandra, *F. v. M.*, var. monantha. W.A., Victoria Desert (C. 49).

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CLAYTONIA BALONNENSIS, *F. v. M.* W.A., Victoria Desert (C. 51); Victoria Spring; capsule oval, hardly half-exsert.

CLAYTONIA VOLUBILIS, *F. v. M.* W.A., Victoria Desert (C. 51), with petals longer than usual.

CLAYTONIA PTYCHOSPERMA, *F. v. M.* W.A., near Mount Squires; a rather large form, with broader leaves and proportionately shorter peduncles.

CARYOPHYLLEÆ.

SAPONARIA TUBULOSA, *F. v. M.* W.A., Fraser Range.

SPERGULARIA RUBRA, *Cambessedes.* W.A., Victoria Spring.

POLYCARPÆA INDICA, *Lamarck.* W.A., near Mount Squires; a form with leafy inflorescence.

AMARANTACEÆ.

ALTERNANTHERA TRIANDRA, *Lamarck.* S.A., Arcoeillina Well.

PTILOTUS LATIFOLIUS, *R. Brown.* W.A., near Boundary Hill.

PTILOTUS OBOVATUS, *F. v. M.* "Met with everywhere, and in all kinds of soil and situation." S.A., Arkaringa; Eastern edge of Everard Range; native name, *purarpurar.* W.A., near Mount Squires, Victoria Desert (C. 48), Fraser Range.

PTILOTUS INCANUS, *Poiret.* S.A., Warrina and Cootanoorina.

PTILOTUS ALOPECUROIDEUS, *F. v. M.* S.A., Cootanoorina and Arkaringa Creeks, near Camps 20 and 21, near Ferdinand River; W.A., Mount Squires; Victoria Desert (C. 51, C. 53).

PTILOTUS HEMISTEIRUS, *F. v. M.* S.A., Everard Range; W.A. Victoria Desert (C. 53); Fraser Range.

PTILOTUS EXALTATUS, *Nees.* S.A., Arkaringa Valley; W.A., near Mount Squires; Victoria Desert (C. 53, C. 57, C. 58), near Southern Cross.

PTILOTUS HELIPTEROIDES, *F. v. M.* S.A., Arkaringa Valley, Everard Range, Camp 10; W.A., near Barrow Range, Mount Squires.

PTILOTUS STRIATUS, *F. v. M.* W.A., near Knutsford, between Red Hill and Yilgarn.

PTILOTUS DRUMMONDII, *F. v. M.* W.A., Victoria Desert (C. 53, C. 54, C. 58, C. 59), Fraser Range, Karolin.

PTILOTUS SPATHULATUS, *Poiret.* W.A., Fraser Range.

PTILOTUS HOLOSERICEUS, *F. v. M.* W.A., Victoria Desert (C. 61, C. 66).

EUXOLUS MITCHELLI, *F. v. M.* S.A., between Everard and Birksgate Ranges; W.A., near Mount Squires.

SALSOLACEÆ.

ATRIPLEX VELUTINELLUM, *F v. M.* S.A., Warrina.

ATRIPLEX ELACHOPHYLLUM, *F. v. M.* S.A., near Birksgate Range, C. 22.

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ATRIPLEX PROSTRATUM, *R. Brown.* W.A., near Mount Squires.

ATRIPLEX QUINII, *F. v. M.* A broad-leaved variety. S.A., Arkaringa Creek.

ATRIPLEX STIPITATUM, *Bentham.* S.A., Warrina; W.A., near Townsend Ridge (C. 38), Victoria Desert (C. 61, C. 64, C. 67), Fraser Range, Lake Lefroy.

ATRIPLEX NUMMULARIUM, *Lindley.* Camp 64, forty miles N.W. from Fraser Range; "called *malloiyi* by natives of Hampton Plain.

ATRIPLEX HALIMOIDES, *Lindley*, var. CONDUPLICATA. S.A., Cootanoorina.

ATRIPLEX SPONGIOSUM, *F. v. M.* S.A., Warrina; Arkaringa Creek.

RHAGODIA CRASSIFOLIA, *R. Brown.* W.A., Victoria Spring; Fraser Range; between Red Kangaroo Hill and Yilgarn.

RHAGODIA SPINESCENS, *R. Brown.* S.A., between Warrina and Nilpena; Upper Arkaringa Valley. W.A., Victoria Spring; Camp 64; Fraser Range *(wandundant).*

RHAGODIA NUTANS, *R. Brown.* S.A., Cootanoorina.

CHENOPODIUM NITRARIACEUM, *F. v. M.* W.A., lat. 26° 42′, long. 122° 58′; (foliage only, D. Cumming).

CHENOPODIUM CARINATUM, *R. Brown.* S.A., Everard Range. W.A., near Mount Squires; Victoria Desert (C. 53).

CHENOPODIUM RHADINOSTACYHUM, *F. v. M.* S.A., near Camp 23. W.A., near Mount Squires; Victoria Desert (C. 53). Var. PANICULATUM. W.A., Victoria Desert (C. 53).

DYSPHANIA LITORALIS, *R. Brown.* S.A., Camp 4; W.A., near Mount Squires.

KOCHIA LOBIFLORA, *F. v. M.* S.A., Cootanoorina Creek; Arkaringa Valley; Upper Arkaringa Valley; Everard Range (C. 2).

KOCHIA LANOSA, *Lindley.* S.A., Nilpena; Turner Hill (C. 9). W.A., Camp 63.

KOCHIA TRIPTERA, *Bentham*, var. ERIOCLADA. W.A., Lake Lefroy.

KOCHIA VILLOSA, *Lindley.* W.A., 20 miles South of Victoria Spring (C. 61); lat. 26° 30′, long. 120° 52′ (D. Cumming).

Var. S.A., Warrina; near Arcoeillina.

KOCHIA APHYLLA, *R. Brown.* S.A., Cootanoorina Creek. Var. Warrina.

KOCHIA SEDIFOLIA, *F. v. M.* S.A., Cootanoorina. W.A., Victoria Spring; Fraser Range, "native name *buddani.*"

KOCHIA CILIATA, *F. v. M.* S.A., Cootanoorina Creek.

KOCHIA ERIANTHA, *F. v. M.* S.A., Arkaringa Creek.

KOCHIA GLOMERIFOLIA, *n. sp.* W.A., North of Fraser Range; also near Victoria Spring (Giles), and on the Upper Murchison River (Tyson).

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Shrubby; branches very spreading, densely beset with very small glomerules of leaves, always tomentellous, sometimes getting spinescent; leaves very minute, closely crowded in each glomerule, from lanceolar verging into an ovate or rhomboid form, concave, partially lanuginous, some shortly petiolate; flowering calyx whitish-velutinous, its lobes inflexed-appressed, but soon erect and irregularly elongating into somewhat spathular crisped membranous appendages; stigmas two; fruiting calyx almost flat below and there radiatingly ten-streaked, slightly elevated above, horizontally expanding into a lobeless or slightly interrupted broadish membrane; fruit depressed, outside brownish; albumen of the seed scanty.

Attains a height of two feet. A remarkable plant, the fruit of which now only known through Mr. Tyson's collection.

Although systematically allied to *K. aphylla*, it is by the innumerable, mostly globular, clusters of leaves, so different in aspect from any other *Kochia*, as to appear quite strange in that genus; indeed, seen in foliage only, the plant rather reminds of *Aster lepidophyllus*, so far as Australian forms of vegetation are concerned.

Babbagia dipterocarpa, *F. v. M.* S.A., Cootanoorina.

Bassia carnosa, *F. v. M.* W.A., Victoria Desert (C. 63).

Bassia eurotioides, *F. v. M.* W.A., near Hunt's Well, Hampton Plain.

Bassia sclerolænoides, *F. v. M.* W.A., Victoria Desert (C. 53, C. 55, C. 56); Camp 66.

Bassia Birchii, *F. v. M.* A remarkably dwarf form, although copiously fruiting. S.A., between Everard and Birksgate Ranges.

Bassia uniflora, *F. v. M.* W.A., Victoria Desert (C. 53).

Bassia diacantha, *F. v. M.* S.A., Upper Arkaringa Valley; W.A., Victoria Spring, Fraser Range.

Bassia lanicuspis, *F. v. M.* S.A., Arkaringa Creek.

Bassia bicornis, *F. v. M.* S.A., Warrina.

Bassia paradoxa, *F. v. M.* S.A., Arkaringa Valley.

Bassia bicuspis, *F. v. M.* S.A., Upper Arkaringa Valley.

Bassia echinopsila, *F. v. M.* W.A., Victoria Desert (C. 54).

Enchylæna tomentosa, *R. Brown.* S.A., Cootanoorina; eastern edge of Everard Range.

Salicornia arbuscula, *R. Brown.* S.A., Cootanoorina.

Salicornia leiostachya, *Bentham.* S.A., Cootanoorina.

Salicornia bidens, *Bentham.* W.A., Lake Lefroy.

Salicornia tenuis, *Bentham.* S.A., Nilpena.

Salsola Kali, *Linné.* S.A., Warrina, Cootanoorina; W.A., Camp 26, Fraser Range.

Var. strobilifera. S.A., Warrina.

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FICOIDEÆ.

TETRAGONIA EXPANSA, *Murray*. W.A., Fraser Range.
AIZOON QUADRIFIDUM, *F. v. M.* W.A., near Knutsford.
ZALEYA DECANDRA, *Burmann*. S.A., Warrina.
TRIANTHEMA CRYSTALLINA, *Vahl*. W.A., near Mount Squires.

POLYGONACÆ.

MUEHLENBECKIA ADPRESSA, *Meissner*. W.A., Warangering.
MUEHLENBECKIA POLYGONOIDES, *F. v. M.* W.A., near Fraser Range, C. 68.
MUEHLENBECKIA CUNNINGHAMII, *F. v. M.* S.A., Cootanoorina; W.A., Fraser Range.

PHYTOLACCEÆ.

GYROSTEMON RAMULOSUS, *Desfont.* S.A.; W.A., Arkaringa Creek and other wet places as far as Barrow Range; locally known as "native pepper."
CODONOCARPUS COTINIFOLIUS, *F. v. M.* Native poplar, "a tree 12 to 15 feet high." S.A., Arkaringa Valley, and sparingly to W.A., Mount Squires and Victoria Desert (C. 56).

NYCTAGINEÆ.

BOERHAAVIA DIFFUSA, *Linné*. W.A., near Mount Squires; lat. 27° 5′, long. 119° 15′ (D. Cumming).

THYMELEÆ,

PIMELEA ANGUSTIFOLIA, *R. Brown*. W.A., Victoria Desert (C. 56, C. 57), near Warangering.
PIMELEA NERVOSA, *Meissner*. W.A., 85 miles N.E. by E. from Esperance Bay (P. A. Gwynne).
PIMELEA FERRUGINEA, *Labil.* W.A., 85 miles N.E. by E. from Esperance Bay (P. A. Gwynne).
PIMELEA TRICHOSTACHYA, *Lindley*. S.A., Arkaringa Creek; W.A., near Barrow Range, Victoria Desert (C. 53, C. 54).
PIMELEA MICROCEPHALA, *R. Brown*. S.A., Warrina, Nilpena, Upper Arkaringa Valley; W.A., Fraser Range; lat. 26° 39′, long. 120° 34′ (D. Cumming).
Var. GLABRA. S.A., Cootanoorina Creek, eastern edge of Everard Range, near Mount Illbillie Soakage at 2,000 feet, Birksgate Range; W.A., Victoria Desert (C. 54).
PIMELEA VILLIFERA, *Meissner*. W.A., between Red Hill and Yilgarn.

LEGUMINOSÆ.

BRACHYSEMA CHAMBERSII, *F. v. M.* WA., 28 miles S.W. of Camp 31, near Barrow Range.

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BRACHYSEMA APHYLLUM, *Hooker*. W.A., 35 miles N.W. from Fraser Range, three to six feet high, without flowers.

OXYLOBIUM OBTUSIFOLIUM, *Sweet*. W.A., 85 miles N.E. by E. from Esperance Bay (P. A. Gwynne). Ovules numerous.

GASTROLOBIUM GRANDIFLORUM, *F. v. M.* W.A., Victoria Desert, C. 53. A shrub three to four feet high. Probably represents the small-flowered state of this species; fruits not collected.

GASTROLOBIUM TRILOBUM, *Bentham*. "Kite-leaf poison plant." W.A., near Brood's Station.

GASTROLOBIUM SPINOSUM, *Bentham*. W.A., Victoria Desert, C. 56. "Poisonous to camels."

GASTROLOBIUM BILOBUM, *R. Brown*. "Heart-leaf poison-plant." W.A., Mount Ridley, 3 to 5 feet; near Esperance Bay (D. Lindsay).

GASTROLOBIUM SEORSIFOLIUM, *F. v. M.* W.A., Victoria Desert (C. 54); near Gnarlbine; about 15 miles W. of Red Hill.

ISOTROPIS JUNCEA, *Turcz*. W.A., 36 miles N.W. from Southern Cross; near Lake Deborah. Fruit imperfectly sericeous, when ripe about one inch long to one sixth inch broad, conspicuously compressed, short stipitate; seeds ripening to five, oblique, roundish renate, about one-tenth inch long.

ISOTROPIS CANESCENS, *F. v. M.* W.A., Victoria Desert (C. 54) Petals purplish, the upper and lateral conspicuously dark-streaked, the two lower quite dark-colored.

MIRBELIA MICROPHYLLA, *Bentham*. W.A., 36 miles N.W. from Southern Cross.

MIRBELIA APHYLLA, *F. v. M.* W.A., near Mount Churchman (C. 94). Externally this plant is much like *Jacksonia stricta*, which species received its name probably through a typographical error, as the ramification is the reverse of strict; the name intended by Meissner was evidently *J. striata*, on account of the streaks on the branches; the phyllode- or spinule-like ultimate branchlets are compressed and mostly quadrangular, in which respect this Jacksonia is also very similar to *Mirbelia aphylla*.

BURTONIA GOMPHOLOIDES, *F. v. M.* W.A., Victoria Desert (C. 56) [Yerdanie and Warangering]. Fruiting at a height of nine inches. Leaflets conspicuously margined. Ripe fruit quite turgid.

BURTONIA SIMPLICIFOLIA, *spec. nov.* W.A., Victoria Desert at Camp 54. Densely beset with minute grey spreading hairlets; leaves crowded, very small, simple, sessile, elliptic- or broad-linear bluntish, revolute at the margin; flowers small, sessile between the uppermost leaves, crowded into headlets few in each; calyx deeply cleft into almost equal lanceolar lobes; petals deep-yellow; anthers roundish-cordate, pale; style upwards glabrous; ovulary densely beset with hairlets.

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Branchlets copious, spreading, or at first curved downward. Leaves one-sixth to one-quarter inch long. Bracts almost leaf-like; bracteoles short. Calyx measuring only one-quarter of an inch in length, before expansion somewhat pyramidal and prominently angled. Petals not much extended beyond the calyx, the upper orbicular, slightly lobed at both extremities. Style when young strongly incurved. Ovules two. Fruit unobtained.

The only other *Burtonia* with simple leaves, namely *B. conferta*, is very different, already in want of indument, less ramification, longer leaves, larger flowers on well-developed stalklets, color of petals, form of anthers and most likely also in fruit-characteristics. In general aspect, as well as smallness of leaves and flowers, our new species approaches *B. gompholobioides*, but that plant is otherwise widely distinct.

JACKSONIA FOLIOSA, *Turcz.* W.A., Victoria Desert (C. 48, C. 54, C. 58); near Knutsford. A plant collected at Camp 58 seems a more ramulose variety of this species; but as yet no fruits are known from any of the localities.

JACKSONIA NEMATOCLADA, *F. v. M.* W.A., near Gnarlbine.

Professor Greene has recently proposed, that the Australian genus *Jacksonia* should be superseded by *Piptomeris*, because Rafinesque utilised some few years before R. Brown the name Jacksonia, giving it generically to a species of *Cleome*, which appellation, however, he subsequently changed to *Polanisia*. But that genus became suppressed for Australia many years ago, and subsequently for Africa by Prof. Oliver. As the one American species, on which *Polanisia* was founded, differs only in trifling respects from other Cleomes, it seems best to restore it (perhaps sectionally) to its original systematic position.

DAVIESIA BREVIFOLIA, *Lindley.* W.A., near Gnarlbine; Victoria Desert (C. 54).

DAVIESIA PACHYLINA, *Turcz.* W.A., Fraser Range (1 ft.); Warangering, a glabrous state with much longer leaves. The acuminate long calyx-lobes are characteristic for this species; the form now mentioned reminds, as regards leaves, much of *D. longifolia*, in which species sometimes also acuminate leaves occur; if specific differences should exist between the two, then ripe fruits (unavailable here) must show this. The long-lobed calyx separates this plant from *D. polyphylla*.

DAVIESIA APHYLLA, *F. v. M.* Young fruit flat, semiorbicular-deltoid, on a very short stipe. W.A., Victoria Desert (C. 56); near Fraser Range (C. 68); 20 miles N.W. from Fraser Range, *mori* of the natives of Hampton Plain.

DAVIESIA ACANTHOCLONA, *F. v. M.* W.A., Victoria Desert (C. 54) and near Gnarlbine. Fruit (hitherto unknown) only about one-third of an inch long and broad, rhomboid-orbicular,

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but slightly inequilateral, considerably compressed, short-acuminate, the stipes shorter than the calyx; one seed ripening, roundish, moderately compressed, greyish-brown, hardly one-twelfth of an inch long, about twice as long as its narrow slender strophiole.

AOTUS PASSERINOIDES, *Meissner*. W.A., near Warangering.

AOTUS TIETKENSII, *F. v. M.* W.A., Victoria Desert (C. 57).

PHYLLOTA LUEHMANNI, *F. v. M.* W.A., Victoria Desert, C. 58.

TEMPLETONIA EGENA, *Bentham*. W.A., Victoria Desert, C. 48, two to three and a-half feet, C. 54.

TEMPLETONIA SULCATA, *Bentham*. W.A., 30 miles N.W. from Southern Cross, five feet high.

CROTALARIA CUNNINGHAMII, *R. Brown*. S.A., between Warrina and Nilpena, Upper Arkaringa Valley, near Blyth Hill; W.A., near Barrow Range, three to four feet.

CROTALARIA DISSITIFLORA, *Bentham* S.A., Warrina.

PSORALEA ERIANTHA, *Bentham*. W.A., near Gnarlbine.

PSORALEA PATENS, *Lindley*. S.A., Birksgate Range.

INDIGOFERA BREVIDENS, *Bentham*. S.A., Cootanoorina and Everard Range; W.A., Barrow Range, about 20 miles west of Red Kangaroo Hill, Victoria Desert, C. 54; long. 122° 30′, lat. 27° 40′ (D. Cumming).

TEPHROSIA PURPUREA, *Persoon*. S.A., near Mount Watson, C. 17; W.A., Mount Squires.

PTYCHOSEMA TRIFOLIOLATUM, *F. v. M.* W.A., near Mount Squires.

CLIANTHUS DAMPIERI, *Cunningham*. W.A., Elder Creek, Warburton Range (Dr. Elliot).

SWAINSONIA COLUTOIDES, *F. v. M.* W.A., Victoria Desert, C. 54.

SWAINSONIA MICROPHYLLA, *A. Gray*. S.A., near Everard Range; W.A., near Barrow Range.

SWAINSONIA CAMPYLANTHA, *F. v. M.* S.A., Arkaringa Creek.

SWAINSONIA PHACOIDES, *Bentham*. S.A., Warrina, near Yeelunginna Hill, C. 4; W.A., Fraser Range.

SWAINSONIA STIPULARIS, *F. v. M.* S.A., near Mount Goolwa, C. 6; near Turner Hill, C. 10.

GLYCYRRHIZA PSORALEOIDES, *Bentham*. W.A., near Hunt's Well.

GLYCINE CLANDESTINA, *Wendland*. S.A., Birksgate Range; W.A., Fraser Range.

GLYCINE TABACINA, *Bentham*. S.A., Warrina.

KENNEDYA PROREPENS, *F. v. M.* W.A., near Barrow Range (C. 33) and Victoria Desert (C. 57). Flowers purple.

KENNEDYA PROSTRATA, *R. Brown*. W.A., between Red Hill and Yilgarn. The specimens are without flowers, but in fruit.

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K. parviflora, which is in West Australia far more frequent, can in the fruiting state be best distinguished by the pod being very blunt at each end.

Cassia Sophera, *Linné*. S.A., near Mount Ibillee.

Cassia notabilis, *F. v. M.* W.A., near Mount Squires.

Cassia pleurocarpa, *F. v. M.* S.A., Birksgate Range. W.A., near Mount Squires; Victoria Desert (C. 49); between Red Hill and Yilgarn; 40 to 50 miles West of Knutsford; long. 122° 30′, lat. 27° 40′ (D. Cumming).

Cassia eremophila, *Cunn.* W.A., Fraser Range.

Cassia artemisioides, *Gaud.* S.A., Arkaringa Valley; W.A., Victoria Desert (C. 58).

Cassia Sturtii, *R. Brown.* S.A., Upper Arkaringa Valley.

Cassia desolata, *F. v. M.* S.A., Warrina; Arkaringa Valley. W.A., Barrow Range; Fraser Range.

Petalostylis labichoides, *R. Brown.* S.A., Everard Range. W.A., Cavenagh Range, at 2,000 feet; Warangering.

Labichea lanceolata, *Bentham.* W.A., Victoria Desert (C. 44).

Acacia patens, *Meissner.* S.A., Cootanoorina; 70 miles S.W. of Birksgate Range. W.A., Barrow Range.

Acacia tetragonophylla, *F. v. M.* S.A., Arkaringa; Everard Range.

Acacia restiacea, *Bentham.* W.A., 30 miles N.W. from Southern Cross.

Acacia triptycha, *F. v. M.* (*?*) W.A., Victoria Desert (Camps 56, 59, 61).

Acacia *aff.* gonophylla, *Bentham*, with long phyllodes. W.A., near Barrow Range.

Acacia extensa, *Lindley.* W.A., Victoria Desert (C. 42).

Acacia ulicina, *Meissner.* W.A., Victoria Desert (C. 56).

Var. oxyclada. W.A., Skirmish Hill.

Acacia erinacea, *Bentham.* W.A., Victoria Desert (C. 61) and Fraser Range.

Acacia acanthoclada, *F. v. M.* W.A., Victoria Desert (C. 54, 56).

Acacia lachnophylla, *F. v. M.* W.A., near Fraser Range.

Acacia Meissneri, *Lehmann.* W.A., Victoria Desert (C. 63), Fraser Range and N.W. of

Acacia sclerosperma, *F. v. M.* W.A., Mount Squires.

Acacia leiophylla, *Bentham.* W.A., Fraser Range, Hunt's Well.

Acacia notabilis, *F. v. M.* W.A., Cavenagh Range.

Var. S.A., near Boundary Hill; 25 to 30 feet.

Acacia salicina, *Lindley.* S.A., Cotanoorina; W.A., widely distributed throughout the Victoria Desert and generally affecting the crown of sand-ridges; Fraser Range.

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ACACIA HOMALOPHYLLA, *Cunningham.* S.A., Warrina and Arkaringa.

ACACIA LEPTOPETALA, *Bentham.* W.A., 50 miles S.E. from Mount Churchman.

ACACIA SUBCOERULEA, *Lindley.* W.A., Fraser Range.

ACACIA STRONGYLOPHYLLA, *F. v. M.* S.A., Birksgate Range.

ACACIA *aff.* STRONGLOPHYLLA. W.A., Fraser Range.

ACACIA PYRIFOLIA, *DeCand.* W.A., Cavenagh Range.

ACACIA ESTROPHIOLATA, *F. v. M.* S.A., Arkaringa Valley.

ACACIA STENOPHYLLA, *Cunningham.* S.A., Cootanoorina and Arkaringa.

ACACIA SCLEROPHYLLA, *Lindley.* W.A., Victoria Desert (C. 37).

ACACIA DICTYOPHLEBA, *F. v. M.* S.A., Upper Arkaringa Valley, Birksgate Range.

ACACIA CYPEROPHYLLA, *F. v. M.* S.A., Warrina and Arkaringa Valley.

ACACIA ANEURA, *F. v. M.* S.A., Arkaringa Valley; W.A., long. 121° 30′, lat. 26° 30′ (D. Cumming).

ACACIA DORATOXYLON, *Cunn.* S.A., Mount Illbillee.

CRASSULACEÆ.

TILLÆA VERTICILLARIS, *DeCand.* S.A., Blyth Hills. W.A., Mount Squires, Victoria Spring, Fraser Range.

TILLÆA PEDICELLOSA, *F. v. M.* W.A., Warangering.

HALORAGEÆ.

HALORAGIS GOSSEI, *F. v. M.* S.A., between Camps 10 and 11. W.A., Mount Squires; Victoria Desert (C. 53, C. 54). Petals, 3; stamens, 6; stigmas, 3. Unrecorded localities are:—Nickol River (Hon. A. Forrest); Fortescue River and Exmouth Gulf (H. S. Carey); Ularing (J. Young); Upper Murchison (S. Dixon); Rawlinson Range (E. Giles).

HALORAGIS CONFERTIFOLIA, *F. v. M.* W.A., near Yilgarn.

HALORAGIS NODULOSA, *F. v. M.* W.A., Karolin.

LOUDONIA AUREA, *Lindley.* W.A., Victoria Desert (C. 54); near Fraser Range and towards Esperance Bay; near Gnarlbine.

STACKHOUSIEÆ.

STACKHOUSIA PUBESCENS, *A. Richard.* W.A., Fraser Range.

STACKHOUSIA HUEGELII, *Endlicher.* W.A., Lake Deborah; between Red Hill and Yilgarn.

STACKHOUSIA MURICATA, *Lindley.* S.A., Arkaringa Valley.

STACKHOUSIA VIMINEA, *Smith.* W.A., between Red Hill and Yilgarn.

STACKHOUSIA MEGALOPTERA, *F. v. M.* W.A., Barrow Range and Gnarlbine.

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STACKHOUSIA BRUNONIS; *Bentham.* W.A., Wangering (with four-winged fruits).

MYRTACEÆ.

DARWINIA LUEHMANNI, *spec. nov.* Glabrous throughout; branchlets numerous, whitish; leaves short, crowded, linear-trigonous, bluntish; flowers crowded into small, almost hemispheric headlets; inner involucral bracts mostly ovate, membranous towards the margin; pedicels undeveloped; bracteoles nearly elliptic; lower part of the calyx transversely rugular and slightly squamulous-papillular, thence the calyx-tube much extended beyond the ovulary; calyx-lobes semi-orbicular; petals almost lanceolar, several times longer than the calyx-lobes; staminodes subulate-linear, towards the base broadish; stamens slightly surpassing the staminodes; style capillulary, near the stigma minutely barbellate; ovules two.

Eighty-five miles N.E. by E. from Esperance Bay (P. A. Gwynne).

Leaves generally about quarter-inch long. Headlets half to two-thirds inch broad. Inner bracts to half inch long, truncate at the base; bracteoles similar, exceeding somewhat the flowers. Calyx five-streaked. Petals white, about one-sixth inch long. Stamens nearly half as long as the petals; anthers quite dark, globular. Style measuring fully half-inch in length. Ripe fruit not obtained.

Nearest in affinity to *D. virescens*, which, however, is more decumbent, has the leaves darker green and more prominently dotted, larger flower-headlets, distinct pedicels, though short; calyx smoothish all over, its lobes almost semilanceolar (but originally described by Meissner as ovate), petals towards the base thicker, staminodia somewhat clavellate.

The species has been dedicated to Mr. G. Luehmann, Assistant at the phytologic establishment of Melbourne, who in the preliminary examination of the Helms-collection has on many occasions given valuable aid.

DARWINIA DIOSMOIDES, *Bentham.* W.A., near Warangering, one to two feet; also Esperance Bay (Dempster), Israelite Bay (Miss Brooks).

VERTICORDIA BROWNII, *De Cand.* W.A., between Red Kangaroo Hill and Yilgarn.

VERTICORDIA CHRYSANTHA, *Endl.* W.A., near Gnarlbine and Warangering; between Esperance Bay and Fraser Range (Gwynne).

VERTICORDIA HUMILIS, *Bentham.* W.A., 15 miles West of Red Kangaroo Hill; near Gnarlbine.

VERTICORDIA MULTIFLORA, *Turcz.*, var. W.A., between Red Kangaroo Hill and Yilgarn.

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VERTICORDIA INSIGNIS, *Endl.* W.A., between Fraser Range and Esperance Bay (P. A. Gwynne).

VERTICORDIA RENNIEANA, *sp. nov.* W.A., between Red Hill and Yilgarn.

Rather dwarf, glabrous except the flowers; leaves short, linear-semi-cylindric, slightly acute, dorsally beset with prominent oil-glandules; pedicels about as long as the leaves, shorter than the expanded flowers; bracteoles very broad, whitish, only short-apiculate; calyx-lobes three-seriate, the upper white except at the base, with moderately ciliar-pennate segments; calyx-lobes of the middle series minute, recurved, fascicular-fimbriate; those of the lowest row repressed, semiorbicular, much adnate, entire, hyaline, forming basal appendages to the upper lobes; calyx-tube short, glabrous, unfurrowed; petals pale, obovate, somewhat surpassing the upper calyx-lobes, entire; staminodes fringeless; fertile anthers cordate-ellipsoid, opening by rather long slits; style quite short, the summit papillular-fringed; stigma inconspicuous; ovulary depressed-globular, but attenuated into the style.

Height, so far as observable from the transmitted specimens, up to about one foot. Branchlets whitish. Leaves one-quarter to one-third of an inch long, erect or slightly spreading, more prominently glandular than those of most other congeners, reminding thus of those of several *Eriostemons*. Flowers rather small, some scattered, some in separate pairs, some racemosely approached among leaves. Petals about a quarter of an inch long. Ripe fruit not obtained.

This species is dedicated to the meritorious Professor of Chemistry in the Adelaide University, Dr. Rennie, who distinguished himself also by phyto-chemic analyses, and who has added here to the scientific obligations which we owe him by carrying on with particular effectiveness the secretarial duties at the recent Adelaide meeting of the Australian Association for the Advancement of Science.

This species differs from *V. picta* in smaller flowers, in the presence of refracted accessory undivided calyx-lobes.

It is distinguishable from *V. Drummondii* and *V. pennigera* by longer leaves, the presence of fringed accessory calyx-lobes, and by undivided not distinctly striate petals.

Incidentally it may here be observed that *V. Roei* constitutes a species distinct from *V. insignis;* it belongs more particularly to the upland region, from where, indeed, the Hon. Cant Roe brought also his plant, while *V. insignis* pertains to the litoral tracts; the staminodes are certainly fringeless, as Endlicher pointed out; the coloration of the flowers is sufficiently different to allow of distinguishing these two plants at a glance when once rightly understood.

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We have *V. Roei* from beyond the sources of the Tone River (Muir), the Upper Gordon River (Mrs. Knight), the Upper Blackwood River (Webb), sources of the Pallinup River (Miss Cronin), Mount Caroline (Miss Sewell).

VERTICORDIA PICTA, *Endl.* W.A., near Gnarlbine; Red Kangaroo Hill.

CALYCOTHRIX TENUIRAMEA, *Turcz.* W.A., between Fraser Range and Esperance Bay (Gwynne). Leaves thicker than usual, bracteoles broader, petals more acute.

CALYCOTHRIX WATSONI, *n. sp.* W.A., 53 miles N.W. from Fraser Range.

Erect shrub, two to three feet high. Branchlets puberulous; leaves distinctly petiolate, very short, from ovate- to narrow-elliptic, flat or somewhat concave above, turgid beneath, soon glabrous; flowers rather small, nearly sessile, mostly scattered; bracteoles almost cuneate-ovate, apiculate, but otherwise very blunt, deeply disconnected, outside puberulous; calyx-tube soon longer than the bracteoles, rather turgid, near the summit attenuated, prominently five-streaked; calyx-lobes comparatively short, nearly lanceolate-linear, narrowed gradually and hardly setular upwards, about as long as the petals, outward as well as the tube much beset with hairlets; petals whitish, blunt; stamens numerous, their anthers ovate-ellipsoid, pale; style glabrous; fruit narrowly fusiform-ellipsoid.

This species differs from *C. plumulosa* in shorter, broader and more angular leaves, in smaller flowers, in neither long-setular nor towards the base suddenly dilated calyx-lobes, and in much less slender calyx-tube. From *C strigosa* it is distinguished at once by the broader leaves, the smallness of flowers, the almost truncate bracteoles, the much shorter and more turgid calyx-tube, the upwards broader calyx-lobes, the more obtuse petals, pale not bright-yellow filaments.

Our new plant shows also some affinity to *C. brachychaeta*, which, however, is a species confined to Arnhem's land.

Named in honor of Professor Archibald Watson, M.D., of the Adelaide University, who, amidst other researches, aided also the expedition, during which this evidently rare plant was discovered.

LHOTZKYA VIOLACEA, *Lindley*, var. MERRELLIANA, *nov.* W.A., between Red Hill and Yilgarn. Also sent by the late Mr. Merrell from near the eastern sources of Swan River. The leaves shorter, the flowers fewer, the petals pale. The typic form was brought by the Hon. W. M. Parker from the vicinity of Mount Stirling.

THRYPTOMENE STENOCALYX, *F. v. M.* W.A., Victoria Desert, C. 54.

THRYPTOMENE MAISONNEUVII, *F. v. M.* S.A., Cootanoorina,

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Arcoeillinna, near Ferdinand River ("Desert ti-tree"); W.A., Victoria Desert, C. 45. Occurs also at the sources of the Ashburton River and beyond the Marie-Alfred Range (Giles).

THRYPTOMENE FLAVIFLORA, *F. v. M.* S.A., Cootanoorina; W.A., Victoria Desert, C. 54.

THRYPTOMENE HYMENONEMA, *F. v. M.* W.A., Victoria Desert, C. 57. Flowers pink.

THRYPTOMENE HELMSII, *F. v. M.* and *Tate.* W.A., Victoria Desert, C. 38, C. 39.

A shrub, three to five feet, almost glabrous; branchlets very slender; leaves closely approximated, obovate, and somewhat cuneate, slightly concave, but otherwise flat, pointless, quite entire, the conspicuous oleigerous glandules particularly visible beneath; flowers short-pedicellate; bracteoles soon much shorter than the flowers, cymbous-ovate, fugacious; calyx-tube turbinate-semiovate, ten-striate and five-plicate; calyx-lobes nearly thrice shorter than the petals, semiorbicular, entire or nearly so; petals almost orbicular, imperfectly denticulated; stamens about seven, much shorter than the petals; anthers roundish, dark-colored, opening by slits; filaments at least twice as long as the anthers; style much shorter than the stamens; stigma depressed; ovules several.

Differs from *T. saxicola* in shorter pedicels, in upwards less dilated calyx-tube, in denticulated petals, which reach further beyond the calyx-lobes, and in proportionately shorter stamens. It is separated from *T. Elliottii* by less thickness and more broadness of leaves, by much more disproportion between the length of the calyx-lobes and petals, and by not absolutely definite number of stamens.

THRYPTOMENE IMBRICATA, *F. v. M.* W.A., between Fraser Range and Esperance Bay (P. A. Gwynne).

THRYPTOMENE OBOVATA, *Turcz*; (syn., *T. Drummondi*). W.A., near Gnarlbine, two feet high, flowers white.

WEHLIA THRYPTOMENOIDES, *F. v. M.* Victoria Desert (C. 54, C. 56, C. 57) and near Warangering; flowers magenta.

Var. with narrower leaves; near Gnarlbine, three feet.

The same species was collected near Lake Brown by Mr. E. Merrall; beyond Youndegin, Mrs. Heal; near Lake Deborah, Hon. Sir John Forrest; eastern sources of Swan River, Miss G. Sewell. A variety with longer leaves, distinctly pedicellate flowers, and broader petals was gathered near Mount Moore by Messrs. King and Lefroy.

KUNZEA SERICEA, *Turcz.* W.A., about 20 miles W. from Red Hill; five feet, flowers red.

BALUSTION PULCHERRIMUM, *Hooker.* W.A., between Red Hill and Yilgarn.

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LEPTOSPERMUM ROEI, *Bentham.* W.A., near Gnarlbine; three to five feet, with rather acute leaves.

MELALEUCA ELLIPTICA, *Labil.* W.A., Fraser Range; four feet.

MELALEUCA UNCINATA, *R. Brown.* W.A., Victoria Desert (C. 59, C. 63) and Warangering.

MELALEUCA PARVIFLORA, Lindley. W.A., Victoria Desert (C. 62), five to seven feet; Gnarlbine, the leaves with a more distinct furrow beneath.

MELALEUCA MACRONYCHIA, *Turcz.* W.A., about 36 miles N.W. from Southern Cross; four to five feet, a form with smaller leaves.

MELALEUCA CORDATA, *Turcz.* W.A., 45 miles N.W. from Mount Churchman; three feet.

Var. OVATA. This form indicates an approach to *M. pentagona.* Similar variability of leaves may be seen in *M. squarrosa* and some other species. W.A., on granite rocks west from Red Kangaroo Hill and at Warangering.

MELALEUCA GLOMERATA, *F. v. M.* At the boundary of S.A. and W.A.

MELALEUCA QUADRIFARIA, *F. v. M.* W.A., Fraser Range; 12 to 15 feet.

BEAUFORTIA INTERSTANS, *F. v. M.* W.A., between Red Hill and Yilgarn; also near Lake Deborah (Mr. Edwin Merrall).

Beaufortia elegans has been collected near Eucla by Mr. G. R. Turner, and seems to occur also at Eyre's Sandpatch, according to Mr. J. B. Batt's collection; this demonstrates for the first time the occurrence of the genus outside of West Australian territory.

B. macrostemon and *B. heterophylla* have been traced eastward as far as Coolgardie by Mr. Edw. Cronin.

B. Schaueri was gathered at Youndegin by Miss Alice Eaton, near Mount Caroline by Miss Geraldine Sewell, and between Mount Rugged and Victoria Spring by Mr. Brooke. It occurs rarely with whitish filaments.

B. squarrosa was brought by Miss A. Eaton from Youndegin.

CALOTHAMNUS BLEPHAROSPERMUS, *F. v. M.* W.A., 140 miles N.E. from Geraldton.

EUCALYPTUS UNCINATA, *Turcz.* W.A., Victoria Desert (C. 56), shrub, 12 feet; about 50 miles N.W. from Knutsford, 20 feet.

EUCALYPTUS PYRIFORMIS, *Turcz.* S.A., near Everard Range and sandhills towards Birksgate Range; W.A., sandhills S. of Victoria Spring.

EUCALYPTUS OLEOSA, *F. v. M.* S.A., between Everard and Birksgate Ranges (C. 9), 70 miles S.W. from Mount Watson; W.A., Victoria Desert (C. 56) and Depot Hill, 70 miles N.W. from Fraser Range.

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EUCALYPTUS CÆSIA, *Bentham.* W.A., Victoria Desert (C. 63), 20 to 30 feet; 40 miles N.W. from Fraser Range; known also from Mount Stirling and about 50 miles east from York (Hon. W. M. Parker).

Some of the leaves verge into a lanceolar-ovate form. Flowers (hitherto undescribed) when expanding sometimes less than a quarter-inch long; calyces just before opening measuring in total length from two-thirds to one inch; tube turbinate-semiovate, often dilated near its edge, somewhat striate; operculum about as long as the tube, hemispheric, suddenly terminating into a conspicuous narrow conic protraction; stamens inflected while in bud, all fertile; filaments rigidulous, dull-yellowish when dried, some attaining a length rather above half an inch; anthers pale, cuneate-ellipsoid, broader towards the base, but pendent, bursting by longitudinal fissures; style prominent, but considerably shorter than the stamens; stigma hardly broader than the summit of the style.

The examination of the flowers now shows that this species should take its systematic place near *E. incrassata.*

EUCALYPTUS INCRASSATA, *Labil.* W.A., throughout the Victoria Desert, Fraser Range.

Var. DUMOSA. S.A., seventy miles S.W. of Pernamo Hill.

EUCALYPUS SALMONOPHLOIA, *F. v. M.* W.A., Victoria Desert (C. 63) and 40 miles N.E. of Fraser Range.

EUCALYPTUS OLDFIELDII, *F. v. M.* S.A., from Everard Range to near Birksgate Range (C. 4, C. 9, 10), 15 feet; W.A., Mount Cooper in Cavenagh Range, a dwarf state at 2,500 feet elevation.

EUCALYPTUS TERMINALIS, *F. v. M.* S.A., Mount Goolwa (C. 6), Everard Range and Wa-wee Rockhole; W.A., Cavenagh and Barrow Ranges, and between them in patches.

EUCALYPTUS ROSTRATA, *Schlechtendal.* W.A., Skirmish Hill.

EUCALYPTUS OCCIDENTALIS, *Endlicher.* W.A., Warangering.

Var. Victoria Desert (C. 61, 63).

EUCALYPTUS GAMOPHYLLA, *F. v. M.* S.A., near boundary of W.A., Mount Cooper in Cavenagh Range.

EUCALYPTUS EUDESMIOIDES, *F. v. M.* W.A., near Barrow Range, Victoria Desert (C. 45, 60); "Desert-gum," 30 to 45 feet; *var.* with ovate leaves, S.A., 25 miles S.S.W. from Mount Watson.

EUCALYPTUS LARGIFLORENS, *F. v. M.* S.A., Mount Ilbillee, Mount Watson; *var.*, Yeelunginna Hill (C. 4).

EUCALYPTUS OBCORDATA, *Turcz.* W.A., 40 miles N.W. from Fraser Range.

EUCALYPTUS REDUNCA, *Schauer.* W.A., Knutsford; 20 feet.

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RHAMNACEÆ.

CRYPTANDRA TRIDENTATA, *Steudel.* W.A., Victoria Desert (C. 43).

CRYPTANDRA *n. sp.* W.A., Victoria Desert (C. 56).

UMBELLIFERÆ.

HYDROCOTYLE CALLICARPA, *F. v. M.* S.A., near Everard Range. Leaves less deeply slit than usual, and the keel of the fruitlets rather more prominent.

DIDISCUS ERIOCARPUS, *F. v. M.* W.A., 60 miles south from Victoria Spring, C. 63.

DIDISCUS GLAUCIFOLIUS, *F. v. M.* Var. with less divided leaves and viscid hairs at base of peduncles. W.A., various places in Barrow Range.

DIDISCUS CŒRULEUS, *De Cand.* W.A., 85 miles N.E. and E. from Esperance Bay (Gwynne).

TRACHYMENE EFFUSA, *Turcz.* W.A., 100 miles N.E. from Geraldton.

ACTINOTUS LEUCOCEPHALUS, *Bentham*, var. HUMILIS. W.A., Warangering; also Mullewa, Upper Murchison (S. Dixon). Plants not exceeding 4 inches high, usually from 1½ to 2; umbel-stalks almost all radical, involucral bracts bearing far less vestiture; some of the inner flowers only bistaminate, a characteristic observed by Mr. L. Rodway also in *A. bellidioides.*

DAUCUS BRACHIATUS, *Sieber.* W.A., near Mount Squires; Fraser Range.

SANTALACEÆ.

EXOCARPOS SPARTEA, *R. Brown.* W.A., 30 miles north of Mount Churchman; 8 to 10 feet.

EXOCARPOS APHYLLA, *R. Brown.* W.A., Fraser Range; "5 to 12 feet, trunk 4 to 7 inches diameter up to 3 feet from the base, then branching."

ANTHOBOLUS EXOCARPOIDES, *F. v. M.* W.A., Skirmish Hill; a shrub 3 to 5 feet high, with divaricate branchlets. Female flowers, solitary or rarely two together, subtended by two involucral bracts; calyx-lobes four, yellow, longer than the short tube, oblong-linear, reflexed; ovulary broadly conical, not quite so long as the calyx; stigma large, sessile; drupe ovoid, 6 by 4·5 mm., to nearly globular, succulent; endocarp hard and smooth. Male flowers not seen.

LEPTOMERIA PREISSIANA, *A. De Cand.* W.A., Lake Lefroy and about 15 miles west of Red Hill; 4 feet; flowers white, about 10 in a raceme.

SANTALUM LANCEOLATUM, *R. Brown.* S.A., near Arcoeillinna; W.A., Cavenagh Range.

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SANTALUM ACUMINATUM, *A. De Cand.* S.A., Cootanoorina. W.A., Victoria Desert (C. 48); Fraser Range and Hampton Plain.

SANTALUM PERSICARIUM, *F. v. M.* W.A., Warangering, Boorabin.

LORANTHACEÆ.

LORANTHUS MURRAYI, *Tate.* S.A., Upper Arkaringa Valley on *Acacia salicina* and *A. aneura.*

LORANTHUS EXOCARPI, *Behr.* S.A., Arkaringa Valley on *Cassia Sturtii* and *Eremophila Freelingi*, Arcoeillinna on *Acacia aneura;* W.A., Von Truer tableland (D. Cumming).

Var. LUTEA. S.A., Cootanoorina on *Acacia sp.*

LORANTHUS LINOPHYLLUS, *Fenzl.* S.A., Upper Cootanoorina Creek on *Acacia aneura;* W.A., Ernest Giles Range (D. Cumming).

LORANTHUS GIBBERULUS, *Tate.* W.A., Cavenagh Range on *Hakea lorea*, Mount Squires.

Var. About 36 miles N. W. from Southern Cross on *Hakea sp.*

LORANTHUS PENDULUS, *Sieber.* W.A., near Mount Squires, Victoria Desert (C. 36) on *Eucalypti.*

Var. AMPLEXIFOLIUS. W.A., Victoria Desert (C. 62) on *Brachychiton Gregorii.*

Var. CANESCENS has a superficial resemblance to *L. Quandang*, the leaves and flowers hoary petals; red inside, not green; flowers stalked. S.A., Cootanoorina and Arkaringa on *Acacia homalophylla.*

LORANTHUS QUANDANG, *Lindley.* W.A., Victoria Desert (C. 36) on *Acacia aneura.*

ISOPOGON DRUMMONDII, *Bentham.* W.A., near Boorabin; two to five feet high.

SIMSIA TENUIFOLIA, *R. Brown.* W.A., between Fraser Range and Esperance Bay (Gwynne). Persoon's genus *Simsia* forms only a section of *Encelia*, Cavanilles, described and figured in 1791, hence *Simsia* of R. Brown becomes restored and *Stirlingia* as a generic name must be abolished.

CONOSPERMUM TODDII, *F. v. M.* W.A., Victoria Desert (C. 54).

Var. GWYNNII. About 85 miles E.N.E. from Esperance Bay (P. A. Gwynne). Differs from the plant originally described in having more numerous leaves of less length and straightness, in less acuminated bracts, in a less slender and more deeply lobed corolla, almost glabrous outside. Should, from an ampler suite of specimens at any future time, when fruits may have also become available, it be deemed desirable to keep Mr. Gwynne's

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plant apart as a species, then the variety-name should be raised to specific rank.

Bentham's variety *leianthum* of *C. polycephalum* belongs also to *C. Toddii*. The genuine *C. polycephalum* is much more rigid, its leaves are longer, less slender and less numerous, and the corolla is bluish and outside somewhat sericeous, whereas that of *C. Toddii* seems more whitish from the commencement. Moreover *C. polycephalum* belongs to the western fall of the country from the dividing range towards the west, while *C. Toddii* is restricted to parts of country stretching eastward from the watershed.

CONOSPERMUM DISTICHUM, *R. Brown*. W.A., Esperance Bay; three feet, "smoke plant" (D. Lindsay). Also at Israelite Bay, Miss Brooke; between Swan River and King George's Sound, Hon. Sir John Forrest; Box Vale, Miss Julia Wells.

CONOSPERMUM STOECHADIS, *Endlicher*. W.A., Karoling.

PERSOONIA, *sp.* W.A., Victoria Desert (C. 54), a low shrub growing on sandhills.

XYLOMELUM ANGUSTIFOLIUM, *Kippist*. W.A., 140 miles N.E. from Geraldton.

LAMBERTIA INERMIS, *R. Brown*. W.A., between Fraser Range and Esperance Bay (Gwynne).

GREVILLEA PTEROSPERMA, *F. v. M.* W.A., Victoria Desert, Camps 54, 59.

GREVILLEA ERIOSTACHYA, *Lindley*. W.A., near Skirmish Hill and Barrow Range; stigma almost terminal, broadly margined.

GREVILLEA JUNCIFOLIA, *Hooker*. S.A., Arkaringa to Everard Range; Ferdinand River, with more glabrous inflorescence. W.A., Mount Ilbillee.

GREVILLEA HUEGELII, *Meissner*; var. GLABRIFLORA. W.A., Esperance Bay (P. A. Gwynne).

Var. SIMPLICIFOLIA. W.A., Victoria Desert (C. 53, C. 59) and near Hunt's Well.

GREVILLEA TERETIFOLIA, *Meissner*. W.A., Boorabin. Fruit very turgid, obliquely oval, one-third to one-half inch long, slightly rough outside; pericarp crustaceous; seeds elliptic, devoid of any conspicuous marginal dilatation.

GREVILLEA ERYNGIOIDES, *Bentham*. W.A., Mount Churchman. Fruit oblique-ovate, two-thirds to one inch long, much compressed, minutely acuminated by the remnant of the style; pericarp crustaceous. Seeds ovate, hardly above a quarter of an inch long, dark-brown, only slightly convex outward, their narrow marginal membrane wearing away.

GREVILLEA NEMATOPHYLLA, *F. v. M.* W.A., near Mount Churchman, and in the Murchison District; "a tree up to 30 feet high."

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GREVILLEA ACUARIA, *F. v. M.* W.A., Victoria Desert (C. 54, C. 56, C. 59).

Agrees in every respect with Drummond's plant, except that most of the leaves are twice as broad, unless the fruit (still unknown) should reveal specific differences. The corolla is red. In the greater width of the leaves it reminds of *G. sparsiflora*.

GREVILLEA HELMSIANA, *spec. nov.* Branchlets thinly grey-tomentellous; leaves pinnatisected, on short petioles, greyish, segments 14 or less, more erect than spreading, linear, pungent-pointed, refracted along the margin, but slightly invested with appressed hairlets beneath; racemes hardly longer than broad; flowers comparatively large; pedicels conspicuous, as well as the rachis densely beset with short appressed hairlets; corolla rather scantily provided with vestiture outside, bearing scattered hairlets up to the middle inside; pistil quite glabrous, hypogynous glandule hippocrepic, torus almost horizontal, laterally divergent; stipes free; ovulary very gibbous; style long-exserted; stigma laterally descendent.

Near Fraser's Range at Camp 71.

Total length of leaves, three inches or less; segments hardly one-tenth inch broad; bracts very fugacious; total longitudinal dimension of the coralla about three-quarters inch, but appearing less from the terminal curvature, the petals probably reddish, unless yellowish; hypogynous glandule much compressed, very prominent, the base very blunt. Fruit unknown.

This species differs from *G. stenomera* in more pointed leaf-segments, broader, never almost pendently recurved racemes, longer flowers, thicker, quite glabrous style, more angular ovulary on comparatively shorter stipes, more patent glandule, longer stigma; and the fruit characteristic, as yet inascertainable, may be also different.

This new Grevillea shows some affinity to *G. longistyla*, particularly in reference to aspect of the racemes; but the stipes adnate to the descending torus and the vestiture of the ovulary distinguish it also from the form with smaller leaves.

G. leucophris and *G. tripartita* come also in some respects near our new species.

GREVILLEA TREURIANA, *F. v. M.* W.A., Victoria Desert (C. 59). This species differs from *G. asparagoides* besides the characteristics originally indicated (Fragm. Phyt. Austral., IX., p. 123) in the color of the floral vestiture, grey not brownish, unless at the summit of the flowers.

HAKEA LOREA, *R. Brown.* S.A., Arkaringa Valley and near Everard Range; W.A., Cavenagh and Barrow Ranges. "Cork-bark tree," attaining to 20 feet; bark corky, deeply fluted, three and a half inches at most, half-inch at least in thickness.

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HAKEA ROEI, *Bentham.* W.A., near Boorabin; four to six feet. The fruit is similar to that of *H. incrassata*, but is more oval, with the pointed apex more terminal and the surrounding seed-membrane is quite pale.

HAKEA PREISSII, *Meissner.* W.A., Murchison district; petals yellow inside; also on the Irwin River.

HAKEA PLATYSPERMA, *Hooker.* W.A., between Boorabin and Guardanoolagin, two to seven feet.

HAKEA FALCATA, *R. Brown.* W.A., near Boorabin; Waranger-ing, two to five feet.

HAKEA GLABELLA, *R. Brown.* W.A., 36 miles N.W. from Southern Cross, five to ten feet.

BANKSIA PRIONOTES, *Lindley.* W.A., 140 miles N.E. from Geraldton.

BANKSIA ELDERIANA, *n. sp.* W.A., Victoria Desert (C. 54).

Branchlets grey-tomentellous; leaves on short petioles, rigid, much elongated, but rather narrow, flat, serrate-pinnatifid, on their upper side the venulation concealed, on their lower side faintly reticulated, the foveoles there slightly whitish-tomentellous; lobes of the leaves semicuneate-deltoid; inflorescencence oval-ellipsoid; petals very narrow, outside to about the middle almost sericeous, their upper portion glabrous or glabrescent, canaliculate-linear, blunt; anthers quite narrow; style only towards its base beset with short hairlets; fruitlets densely pubescent at their lower portion, glabrescent towards the somewhat acutangular summit; seeds cuneate-deltoid, terminated by a membranous appendage quite as long and considerably broader.

Well-developed leaves seven to ten inches long, hardly ever exceeding half-inch in breadth, almost of equal colour on both sides, downward gradually narrowed, also upwards less broad than near the middle. Flowers only seen as remnants among the fruitlets, thus the colour unascertainable; the styles all broken, so that no stigma remained. United mass of fruitlets four to five inches long; individual fruitlets two-thirds to nearly one inch broad. Seeds-testule and its appendicular protraction black. Bears some resemblance to *B. lævigata*, though the leaves are much longer and not truncate, besides having far longer lobes, while also the indument of the petals is very different. From *B. media* it is similarly distinguished, as mentioned above, by the form of the leaves, which moreover are not much paler underneath, but the characteristics of the petals are almost the same. What Sir Joseph Banks for material support has been to the science of Britain at his time, that Sir Thomas Elder has been in promoting scientific knowledge for South Australia at our period; hence this plant is chosen to connect his honored name with that of the British Mæcenas in a genus, which was named already by Linnæus—the younger.

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This species seems to form one of the eastern outposts of the vast mass of western Banksias, and may be still more limited in its range than *B. ornata*. The celebrated and very venerable Edw. J. Eyre (Journ. of Discovery—Expedit., II., 14) met the first western Banksia, perhaps *B. media*, at Point Dover; therefore, still a degree further east than the longitude in which *B. Elderiana* appears. *B. marginata* does not seem to penetrate westward beyond Marble Range, 30 miles N.W. from Port Lincoln.

The following notes on the geographic distribution of some Banksias may not be inopportunely offered:—

B. sphærocarpa at the Irwin and Arrowsmith Rivers, *F. v. M.*

B. occidentalis at Wilson's Inlet, *F. v. M.;* petals yellow, style bright-red.

B. attenuata extends with *B. prionotes* northward to near Shark's Bay, *F. v. M.;* flowers yellow.

B. Menziesii at Greenough River, *F. v. M.;* bark verrucose, petals yellow, style red and just below the stigma remarkably constricted.

B. nutans at Greenough River; petals beset on the outside with silver-grey hairlets.

RUBIACEÆ.

OLDENLANDIA ELATINOIDES, *F. v. M.* W.A., Karolin.

CANTHIUM LATIFOLIUM, *F. v. M.* S.A., Upper Arkaringa Valley, near Wa-Wee Waterhole, Everard Range. W.A., Ernest Giles' Range (D. Cumming).

CANTHIUM OLEIFOLIUM, *Hooker.* W.A., Victoria Desert.

OPERCULARIA SCABRIDA, *Schlecht.* W.A., Victoria Desert (C. 57), with shorter peduncles than usual; Yerdanie, and near Red Kangaroo Hill.

POMAX UMBELLATA, *Solander.* S.A., near Mount Watson. W.A., Victoria Desert (C. 54).

CUCURBITACEÆ.

MELOTHRIA MADERASPATANA, *Cogn.* S.A., Everard and Birksgate Ranges.

COMPOSITÆ.

BRACHYCOME CILIARIS, *Lessing.* S.A., Warrina; W.A., Victoria Desert (C. 53), Fraser Range.

BRACHYCOME MUELLERI, *Sonder* (?). W.A., Victoria Springs.

MINURIA LEPTOPHYLLA, *DeCand.* S.A., Arkaringa Valley.

MINURIA CUNNINGHAMII, *Bentham.* S.A., Arkaringa.

MINURIA CANDOLLEI, *F. v. M.*, forma DENTICULATA. S.A., Cootanoorina.

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MINURIA SUAEDIFOLIA, *F. v. M.* W.A., near Fraser Range (C. 65), Southern Cross.

CALOTIS ERINACEA, *Steetz.* S.A., Upper Arkaringa Valley; var. with profusedly divaricate ramification and minute leaves. W.A., Cavenagh and Barrow Ranges.

CALOTIS CYMBACANTHA, *F. v. M.* S.A., Warrina and between Nilpena and Cootanoorina; W.A., long. 122°, lat. 26° 30′ (D. Cumming).

CALOTIS LATIUSCULA, *F. v. M.* and *Tate.* S.A., Upper Cootanoorina Valley and along Arkaringa Creek.

CALOTIS PLUMULIFERA, *F. v. M.* S.A., Upper Arkaringa Valley; W.A., Victoria Desert (C. 53, C. 54).

CALOTIS HISPIDULA, *F. v. M.* S.A., Cootanoorina, near Mount Watson, and Birksgate Range; W.A., near Mount Squires.

ASTER MITCHELLI, *F. v. M.* S.A., around Everard Range; W.A., Victoria Spring and Lake Lefroy.

ASTER EXIGUIFOLIUS, *F. v. M.* W.A., between Red Hill and Yilgarn.

ASTER MUELLERI, *Sonder.* W.A., Victoria Desert (C. 59, 61).

ASTER MEGALODONTUS, *F. v. M.* S.A., Everard Range; W.A., near Mount Squires. The leaves are more elongated and, therefore, proportionately narrower than those of the plant as originally described. As regards aspect, it is not dissimilar to *Pterigeron dentatifolius*, but in floral characters very distinct.

VITTADINIA AUSTRALIS, *A. Richard.* S.A., Arkaringa Valley; W.A., Victoria Desert (C. 53) and Fraser Range.

PLUCHEA CONOCEPHALA, *F. v. M.* W.A., Victoria Spring, thence to Fraser Range and Lake Lefroy; var. MICROPHYLLA, Lake Lefroy; var. SUBSPINESCENS, near Hunt's Well.

PLUCHEA DENTEX, *R. Brown.* S.A., Everard and Birksgate Ranges. Known also from the Finke River (Rev. H. Kempe), near MacDonnell Range and Mount Olga (E. Giles), previously recorded as *P. Eyreana;* also near the Isaac's River (P. O'Shanesy). In the "Botany of the Horn Expedition" this species is quoted under *P. squarrosa.* Irrespective of other characteristics already promulgated, the leaves are narrower than those of *P. squarrosa*, and the headlets generally on longer stalks. As in the closely allied species, the corollas are purple.

PTERIGERON LIATROIDES, *Bentham.* W.A., near Hunt's Well.

PTEROCAULON SPHACELATUS, *Bentham & J. Hooker.* S.A., Cootanoorina Creek.

Var., W.A., Cavenagh Range. "The plant emitted a scent like that of ripe apples, even a long time after being dried."

GNAPHALIUM JAPONICUM, *Thunberg.* W.A., Fraser Range and near Lake Deborah.

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GNAPHALIUM INDUTUM, *J. Hooker*. S.A., Arkaringa Creek.

IXIOLÆNA LEPTOLEPIS, *Bentham*. S.A., Arkaringa Valley; W.A., Fraser Range.

IXIOLÆNA TOMENTOSA, *Sonder & F. v. M.* S.A., Arkaringa Valley.

PODOLEPIS CANESCENS, *Cunningham*. S.A., Everard Range.

Var. AFFINIS, *Sonder*. W.A., near Mount Squires, Barrow Range, Victoria Desert (C. 50, C. 53).

This plant differs from *P. pallida* in not distinctly rugulose involucral bracts and pronounced yellowish peripheral corollas. The specimens from Victoria Desert show the ligules exceptionally deeply slit.

PODOLEPIS RUGATA, *Labil.* W.A., near Fraser Range (C. 65) and towards Esperance Bay.

PODOLEPIS SIEMSSENII, *F. v. M.* S.A., Upper Arkaringa Valley and Arcoeillina. W.A., Victoria Desert (C. 53) and Fraser Range.

ATHRIXIA TENELLA, *Bentham*. W.A., near Fraser Range (C. 66).

WAITZIA CORYMBOSA, *Wendland*. W.A., near Mount Squires, Victoria Desert (C. 50-54), Fraser Range.

HELIPTERUM FLORIBUNDUM, *De Cand.* S.A., Arkaringa and towards Everard Range. W.A., Victoria Desert (C. 53, C. 54) and Fraser Range.

HELIPTERUM FITZGIBBONI, *F. v. M.* W.A., Mount Squires and Victoria Desert (C. 40, C. 53).

HELIPTERUM STIPITATUM, *F. v. M.* S.A., Arkaringa Creek and Upper Arkaringa Valley. W.A., near Mount Squires and Barrow Range, also a variety dwarfed to one and a-half inches; Victoria Desert (C. 50, C. 53).

HELIPTERUM HUMBOLDTIANUM, *De Candolle*. W.A., Fraser Range.

HELIPTERUM TENELLUM, *Turczaninow*. W.A., Fraser Range and near Lake Deborah.

HELIPTERUM STRICTUM, *Bentham*. W.A., near Mount Squires and Barrow Range, Victoria Desert (C. 53).

HELIPTERUM PYGMÆUM, *Bentham*. W.A., near Fraser Range (C. 66), Karolin.

HELIPTERUM MOSCHATUM, *Bentham*. S.A., Birksgate Range.

HELIPTERUM PTEROCHÆTUM, *Bentham*. S.A., Arcoeillina, 15 miles W. of Wa-wee waterhole; W.A., Victoria Desert (C. 53).

HELIPTERUM DIMORPHOLEPIS, *Bentham*. W.A., Fraser Range.

HELIPTERUM TROEDELII, *F. v. M.* W.A., near Fraser Range.

HELICHRYSUM CASSINIANUM, *Gaud.* W.A., near Mount Squires, Victoria Desert (C. 51, 53), Fraser Range.

HELICHRYSUM LAWRENCELLA, *F. v. M.* S.A., towards Everard

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Range; W.A., near Mount Squires, Victoria Desert (C. 54), with glabrous achenes and with a pappus transitory to that of *Helipterum*.

HELICHRYSUM AMBIGUUM, *Turcz.* S.A., Arkaringa Creek, Everard Range. W.A., near Barrow Range, with narrower more ciliolated involucral bracts; Victoria Desert (C. 50), Fraser Range.

HELICHRYSUM APICULATUM, *De Cand.* S.A., Warrina to Everard Range; W.A., near Mount Ilbillee soakage, Fraser Range.

HELICHRYSUM AYERSII, *F. v. M.* S.A., towards Everard Range; W.A., near Mount Squires.

HELICHRYSUM ADNATUM, *Bentham.* W.A., 85 miles N.E. by E. from Esperance Bay (Gwynne).

Headlets in an unopened state almost globular, or verging into an ovate-ellipsoid form as also in *H. lepidophyllum*; but likewise probably when fully developed campanular-hemiellipsoid. The latter species, however, has its leaves always bent downward, never erect; they are moreover usually shorter and always proportionately much broader. In the Elder-Expedition plant the leaves are adnate at and near the median line of upper side to their middle or even beyond, towards the margin free. It differs mainly from *H. diotophyllum* in having the leaves more adnate, and not conspicuously and suddenly dilated at and near the base and in having the floral bracts not yellowish. It is distinct from the genuine *H. decurrens* in, though adnate, yet not really decurrent leaves, which have an acute apex. From *H. retusum* it is removed by the form of the leaves and the color of the flower-headlets.

Unrecorded localities of the several closely-allied plants here alluded to are:—

Helichrysum adnatum, Wimmera (Matthews); between the Darling and Lachlan River (G. Day).

Helichrysum diotophyllum, near the Lachlan River (G. Tucker), near Darling River (G. Day), Upper Balonne River (Scortechini).

Helichrysum decurrens, Fowler's Bay (Mrs. Richards).

Helichrysum lepidophyllum, Upper Kalgan River (F. v. M.), Tone River (Muir).

RUTIDOSIS HELICHRYSOIDES, *De Cand.* S.A., between Wa-wee waterhole and Everard Range.

HUMEA GRACILLIMA, *n. sp.* W.A., Victoria Desert (C, 44).

Annual, very small, somewhat rough from minute glandules; stems one or more, extremely slender, often unbranched; leaves very short, filiform-linear, blunt; headlets quite small, terminal, solitary, almost hemispheric; involucral bracts comparatively

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broad, glabrous, hardly acute, the outer dull-purplish, the inner yellow, with deltoid-orbicular radiating plate on a broad transparent stipes; flowers scarcely exceeding the involucre, numerous; tube of the corolla beset with glandules; achenes ellipsoid-ovate, glabrous, somewhat pellucid.

The specimens gathered from one and a half to five inches high; leaves one-eighth to half-inch long, those at the root crowded; headlets one-quarter to one-third inch broad, the involucral bracts appressed; corolla-lobes conspicuous; anthers partly exserted; achenes many times shorter than the corollas, hardly seen ripe. Resembles strikingly *Helipterum Jesseni*, but no trace of any pappus does exist. The plant is also closely allied to *Acomis macra*.

HUMEA TENERRIMA, *n. sp.* S.A., near Mount Ilbillee.

A minute and remarkably delicate plant, but in incipient inflorescence only. It is scantily pubescent, the leaves are very small, thinly petiolate, ovate-lanceolar, pellucid; the headlets are scattered, extremely small, with white broadish involucral bracts and with but few flowers, one of which occasionally very slender and bearing an exserted bifid style. No pappus could be discerned, owing perhaps to the very young state of the specimens. If it is really absent we would have another *Humea*, but perhaps this curious plantlet may belong to *Helichrysum* or some other allied genus. It resembles somewhat *Rutidosis Pumilio*, but the leaves are as delicately membranous as those of *Stellaria media*.

MILLOTIA KEMPEI, *F. v. M.*, var. HELMSII. S.A., Birksgate Range to the border of W.A.

Procumbent to the breadth of nearly one foot; headlets often as broad as their length; involucral bracts only bearing a slight glandular-viscid vestiture, not a lanuginous indument as in the type. Ripe fruit not known. A similar variability has been observed in *M. Greevesii*. This species brings the genus *Millotia* into close contact with *Toxanthus*.

TOXANTHUS PERPUSILLUS, *Turcz.* S.A., Everard Range at 2,000 ft.; also W.A., at Yilgarn (Mr. Merrall).

TOXANTHUS MAJOR, *Turcz.* W.A., Victoria Desert (C. 54).

MYRIOCEPHALUS RHIZOCEPHALUS, *Bentham.* W.A., Cavenagh Range, Victoria Desert (C. 53), Fraser Range.

MYRIOCEPHALUS STUARTII, *Bentham.* S.A., Cootanoorina and Birksgate Range.

ANGIANTHUS TOMENTOSUS, *Wendland.* W.A., Fraser Range and near to (C. 64).

ANGIANTHUS PUSILLUS, *Bentham.* S.A., Arkaringa Valley; W.A., Mount Squires, Victoria Desert (C. 53, 60), Karolin.

ANGIANTHUS STRICTUS, *Bentham.* W.A., Victoria Spring, Fraser Range, Quardanoolagin.

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GNEPHOSIS . W.A., Fraser Range; Camp 64.

GNEPHOSIS . W.A., Victoria Desert (C. 53).

CEPHALIPTERUM DRUMMONDII, *A. Gray*. W.A., Fraser Range.

GNAPHALODES ULIGINOSUM, *A. Gray*. W.A., Fraser Range.

GNAPHALODES CONDENSATUM, *A. Gray*. W.A., Victoria Desert (C. 53) and near Fraser Range (C. 66). A small but caulescent form.

SIEGESBECKIA ORIENTALIS, *Linné*. S.A., foot of Everard Range.

FLAVERIA AUSTRALASICA, *Hooker*. S.A., Arkaringa Valley.

SENECIO GREGORII, *F. v. M.* S.A., Cootanoorina, Upper Arkaringa Valley. W.A., Fraser Range.

SENECIO MAGNIFICUS, *F. v. M.* S.A., foot of Everard Range.

SENECIO LAUTUS, *Solander*. W.A., near Mount Squires and Fraser Range.

SENECIO BRACHYGLOSSUS, *F. v. M.* S.A., Arkaringa; W.A., near Warangering.

ERECHTITES QUADRIDENTATA, *De Cand.* S.A., Arkaringa; W.A., Fraser Range.

ERECHTITES LACERATA, *F. v. M.* S.A., foot of Everard Range.

CAMPANULACEÆ.

LOBELIA HETEROPHYLLA, *Labil.* WA., Fraser Range and between Red Hill and Yilgarn.

ISOTOMA PETRÆA, *F. v. M.* S.A., Arkaringa Valley, Everard Range. W.A., Fraser Range; Yerdanie (with white flowers).

WAHLENBERGIA GRACILIS, *De Cand.* S.A., Arkaringa Creek. W.A., Mount Squires, Fraser Range, Karolin, &c.

CANDOLLEACEÆ.

CANDOLLEA PILOSA, *Labillardiere*. W.A., 85 miles N.E. by E. from Esperance Bay (Gwynne).

CANDOLLEA LIMBATA, *F. v. M.* W.A., Victoria Desert (C. 57-59), near Gnarlbine.

CANDOLLEA BREVISCAPA, *F. v. M.* W.A., Victoria Desert (C. 54, 56), Karolin.

LEUWENHOEKIA STIPITATA, *F. v. M.* W.A., Karolin.

GOODENIACEÆ.

BRUNONIA AUSTRALIS, *Smith*. W.A., near Mount Squires and Barrow Range.

DAMPIERA LUTEIFLORA, *F. v. M.* W.A., near Warangering.

DAMPIERA ALATA, *Lindley*. W.A., between Red Hill and Yilgarn.

Several other species of this difficult genus, mostly without ripe fruit, are reserved for critical examination.

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LESCHENAULTIA HETEROMERA, *Bentham.* W.A., near Gnarlbine and between Fraser Range and Esperance Bay; var. with longer, less-pointed leaves, the corolla blue, and to one inch long; Victoria Desert (C. 42, 44, 58).

SCÆVOLA SPINESCENS, *R. Brown.* S.A., Wa-wee waterhole; W.A., near Mount Squires, Victoria Desert (C. 53), Fraser Range, Von Truer tableland (D. Cumming).

SCÆVOLA OXYCLONA, *F. v. M.* W.A., Fraser Range, a low bush, hemispherically spreading to three feet diameter.

SCÆVOLA DEPAUPERATA, *R. Brown.* S.A., about Mount Watson, on sandy soil; branches shortly hairy or scabrous.

SCÆVOLA FASCICULATA, *Bentham.* W.A., near Yerdanie and Gnarlbine.

SCÆVOLA REINWARDTII, *De Vriese.* W.A., near Warangering.

GOODENIA SCAPIGERA, *R. Brown.* W.A., 85 miles N.E. from Esperance (Gwynne).

GOODENIA RAMELII, *F. v. M.* W.A., near Mount Squires. The style is villous, and the stigma-cover is distinctly ciliolate; the calyx-lobes are rather longer than usual.

GOODENIA PINIFOLIA, *De Vriese.* W.A., near Southern Cross.

GOODENIA ELDERI, *n. sp.* W.A., on sandy places near Gnarlbine and Warangering.

Erect, somewhat lignescent; stems and branches bearing a thin whitish tomentum; leaves mostly rather short, very slender, filiform, as well as the inflorescence almost glabrous; peduncles terminating branchlets, bearing few or several racemose paniculate flowers; bracts leaflike; pedicels mostly longer than the flowers, bearing midway two linear bracteoles; lobes of the calyx at first much longer than the tube, narrow-linear; lobes of the corolla all expanding into whitish upward-narrowed membranes: anthers narrow, blunt; style beset with short spreading hairlets: stigma-cover except its base glabrous; fruit oval-ellipsoid; dissepiment high; seeds several in each cell.

Height of plant to two feet, as far as seen; its taste bitter. Root perpendicularly descending, unbranched, scantily fibriliferous. Ramification upwards short. Longest leaves measuring one and a-half inches; length of most less than an inch; many of the leaves by abbreviation of branchlets somewhat fasciculate. Tube of the corolla unilaterally protruding to a slight extent; somewhat beset with hairlets along the sutures. Membranous lobe-expansions of inconsiderable width; stigma-cover longer than broad, even at the orifice, glabrous. Ripe fruit not available. Seeds imbricate in two rows within each cell.

This rich-flowering species approaches in some of its characteristics to *G. pinifolia*, in others to *G. scapigera*. With the former it agrees much in foliage, but the calyces are much larger,

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the fruits many-seeded and of different structure, though the membrane of the corolla-lobes is also white in that plant. The analysis by Ver Huell, given for the fruit in De Vriese's Goodenovieæ, shows ripe seeds as ample as the fruit cavity; we find them much smaller and rather numerous, but in the present species they may not be fully ripe, though already quite dark. With *G. scapigera* our new plant shares in the shape of the calyces and fruits, size of dissepiment and number of seeds, differing, however, extremely in foliage, much closer inflorescence, and much longer pedicels.

GOODENIA WATSONI, *n. sp.* W.A., near Gnarlbine.

Perennial, herbaceous, almost glabrous; leaves nearly all radical, narrowly lanceolar or elliptic-cuneate, gradually narrowed into their petioles, remotely denticulated from the middle upward or only towards the summit; axils of petioles lanuginous; stems peduncle-like; panicle rather long but contracted; flowers small; pedicels short, most of them minutely bibracteolate about the middle; expanding membranes of the corolla-lobes white, narrow without terminal dilations; anthers blunt; style beset with minute hairlets; stigma-cover glabrous except with a hardly perceptible ciliolation at the orifice; fruit very small, globular-oval; dissepiment reaching to beyond the middle of the cavity; seeds several in each cell, minute, dark-brown, flat, devoid of marginal expansion.

Here again we have a combination of characteristics of *G. scapigera* and *G. pinifolia*, but reversedly as compared to those of *G. Elderi*. Thus *G. Watsoni* has the leaves like those of *G. scapigera*, but the small flowers and fruits quite similar to those of *G. pinifolia*, though in much less spreading panicle.

The species name is in compliment to Professor Watson, of the Adelaide University, who as Sir Thomas Elder's representative has so largely identified himself with the organisation of the Expedition.

GOODENIA STROPHIOLATA, *F. v. M.* W.A., 30 miles N.W. from Fraser Range, Karolin. Also found at Parker's Range and Yilgarn by Merrall, between the Great Bight and Victoria Spring by Crawford, and near Youndegin by Miss A. Eaton.

GOODENIA XANTHOSPERMA, *F. v. M.* W.A., Victoria Desert (Camps 44, 50, 54). The radical leaves provided only with very short petioles, the thick portion of the corolla-lobes thinly pubescent on the outside.

GOODENIA INCANA, *R. Brown.* W.A., near Warangering.

GOODENIA CŒRULEA, *R. Brown.* W.A., between Red Hill and Yilgarn, and near Warangering.

GOODENIA HETEROCHILA, *F. v. M.* S.A., Arcoeillina Well and Upper Arkaringa Valley; near Mount Watson (C. 17). A

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small-leaved variety, with larger seeds. W.A., Barrow Range, Victoria Desert (C. 50); var. ANGUSTIFOLIA.

GOODENIA PINNATIFIDA, *Schlecht.*, var. MINOR. W.A., Fraser Range. The seeds are pale brown, but not matured.

GOODENIA CONCINNA, *Bentham.* W.A., near Mount Squires; a tall variety, with roundish-oval fruits, and larger, more membranously-margined seeds, Victoria Desert (C. 54). The corolla in typical specimens is minutely puberulous externally, and its lobes are almost truncate, not as in *G. filiformis* anteriorly bilobulate.

GOODENIA MICROPTERA, *F. v. M.* W.A., Victoria Desert (C. 53), offers an approach to *Calogyne Berardiana.*

VELLEYA CONNATA, *F. v. M.* W.A., from Skirmish Hill to Victoria Desert (C. 53); a form with somewhat pinnati-lobed radical leaves and with indented bracts.

VELLEYA DISCOPHORA, *F. v. M.* W.A., near Gnarlbine, two feet high, radical leaves elliptic-spathulate, three inches long, somewhat serrulate; also Annean (S. Dixon).

VELLEYA CYCNOPOTAMICA, *F. v. M.* W.A., Victoria Desert (C. 53, 62); flowers pink.

VELLEYA PARADOXA, *R. Brown.* W.A., near Barrow Range and Victoria Desert (C. 41, 51, 53).

GENTIANEÆ.

ERYTHRÆA SPICATA, *Persoon.* W.A., between Red Hill and Yilgarn.

LOGANIACEÆ.

LOGANIA STENOPHYLLA, *F. v. M.* W.A., Victoria Desert (C. 59).

LOGANIA NUDA, *F. v. M.* W.A., Victoria Desert (C. 59); flowers pale-yellow.

LOGANIA FLAVIFLORA, *F. v. M.* W.A., near Gnarlbine; a dwarf state, flowers primrose-yellow.

PLANTAGINEÆ.

PLANTAGO VARIA, *R. Brown.* S.A., Cootanoorina, Arkaringa; W.A., Fraser Range.

JASMINEÆ.

JASMINUM LINEARE, *R. Brown.* S.A., Everard Range.

JASMINUM CALCAREUM, *F. v. M.* W.A., Victoria Desert (C. 54).

APOCYNEÆ.

ALYXIA BUXIFOLIA, *R. Brown.* W.A., Victoria Desert (C. 54) Fraser Range.

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ASCLEPIADEÆ.

SARCOSTEMMA AUSTRALE, *R. Brown.* S.A., Upper Arkaringa Valley; W.A., Von Truer Tableland (D. Cumming).

DÆMIA KEMPEANA, *F. v. M.* S.A., Upper Arkaringa Valley; W.A., Fraser Range.

MARSDENIA LEICHARDTIANA, *F. v. M.* W.A., Fraser Range, near Mount Kenneth.

CONVOLVULACEÆ.

CONVOLVULUS ERUBESCENS, *Sims.* S.A., Upper Arkaringa Valley, Everard Range; W.A., Fraser Range.

IPOMŒA HETEROPHYLLA, *R. Brown.* S.A., Cootanoorina Creek.

BREWERIA ROSEA, *F. v. M.* S.A., between Peculiar Hill (C. 15) and Mount Watson (C. 16). W.A., near Barrow Range, Victoria Desert (C. 54).

EVOLVULUS LINIFOLIUS, *Linné.* W.A., Mount Squires.

WILSONIA HUMILIS, *R. Brown.* W.A., Victoria Desert (C. 68) and between Red Hill and Yilgarn.

SOLANACEÆ.

SOLANUM SIMILE, *F. v. M.* W.A., Lake Deborah.

SOLANUM FEROCISSIMUM, *Lindley.* S.A., Ferdinand River; W.A., Mount Ilbillee.

SOLANUM ORBICULATUM, *Dunal.* W.A., Victoria Desert (Camps 45, 53, 61), Fraser Range, Lake Deborah. Berry whitish, with green stripes.

SOLANUM ESURIALE, *Lindley.* S.A., Arkaringa Valley. W.A., West of Ernest Giles Range (D. Cumming).

SOLANUM STURTIANUM, *F. v. M.* S.A., Warrina; W.A., near Mount Squires.

SOLANUM OLDFIELDII, *F. v. M.* W.A., near Barrow Range, Victoria Desert (C. 50-59), Fraser Range.

SOLANUM HYSTRIX, *R. Brown.* W.A., near Fraser Range (C. 67-68), near Gnarlbine.

SOLANUM EREMOPHILUM, *F. v. M.* S.A., Everard Range, at 2,000 feet; W.A., 25 miles N.W. from Fraser Range.

SOLANUM PETROPHILUM, *F. v. M.* S.A., Mount Watson.

SOLANUM LASIOPHYLLUM, *Dunal.* W.A., Victoria Desert (C. 53), Fraser Range, near Mount Churchman (C. 94); Von Treuer Tableland (D. Cumming).

SOLANUM ELLIPTICUM, *R. Brown.* S.A., Upper Arkaringa Valley; W.A., var. PANNIFOLIUM, Victoria Desert (C. 53 and 54).

NICOTIANA SUAVEOLENS, *Lehmann.* S.A., Warrina, Arkaringa Valley, near Ferdinand River, Birksgate Range, Blyth Hills;

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W.A., near Mount Squires, Victoria Desert (C. 53-61), Fraser Range.

ANTHOTROCHE BLACKII, *F. v. M.* W.A., Victoria Desert (C. 54, 56).

DUBOISIA HOPWOODI, *F. v. M.* S.A., Arkaringa Creek and Upper Arkaringa Valley (8-10 feet); W.A., Victoria Desert (C. 40, 43 (3-5 feet), 59) and Fraser Range.

SCROPHULARINÆ.

STEMODIA VISCOSA, *Roxburgh.* S.A., near Mount Watson and Birksgate Range; W.A., 100 miles N.E. from Geraldton.

PEPLIDIUM MUELLERI *Bentham.* S.A., Arkaringa Valley.

LIMOSELLA AQUATICA, *Linné.* W.A., Karolin.

BIGNONIACEÆ.

TECOMA AUSTRALIS, *R. Brown.* S.A., Everard Range, at 2,000 feet; W.A., Barrow Range.

ACANTHACEÆ.

JUSTICIA PROCUMBENS, *Linné.* S.A., Arkaringa Creek.

LABIATÆ.

PLECTRANTHUS PARVIFLORUS, *Henckel.* S.A., Everard Range, at 2,000 feet.

PROSTANTHERA WILKIEANA, *F. v. M.* S.A., near Coffin Hill and near Mount Watson. A small-flowered state, with silky pubescence.

PROSTANTHERA BAXTERI, *Cunn.* S.A., 70 miles S.W. from Mount Watson; W.A., Victoria Desert (C. 61), near Gnarlbine, 50 miles N.N.E. from Knutsford.

PROSTANTHERA STRIATIFLORA, *F. v. M.* S.A., Arcoeillina; Arkaringa Valley, var. with long silky leaves; Everard Range, up to 2,500 feet.

PROSTANTHERA COCCINEA, *F. v. M.* W.A., near Gnarlbine.

WESTRINGIA CEPHALANTHA, *F. v. M.* W.A., near Gnarlbine, two to four feet.

WESTRINGIA RIGIDA, *R. Brown.* S.A., Arkaringa; W.A., Victoria Desert (C. 54, 56, 57), a form with longer leaves and larger flowers.

TEUCRIUM SESSILIFLORUM, *Bentham.* W.A., Fraser Range.

TEUCRIUM FILILOBUM, *F. v. M.* W.A., Fraser Range, an undershrub, one foot.

TEUCRIUM RACEMOSUM, *R. Brown.* S.A., Arkaringa Valley, the form with narrow leaf-segments.

TEUCRIUM GRANDIUSCULUM, *F. v. M.* and *Tate.* S.A. and W.A., an undershrub, one and a half feet; also Ooldea, Great Australian Bight (R.T.).

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VERBENACEÆ.

SPARTOTHAMNUS TEUCRIIFLORUS, *F. v. M.* S.A., Arkaringa Valley; W.A., Skirmish Hill, near Mount Squires, Victoria Desert (C. 40); Ernest Giles Range (D. Cumming).

LACHNOSTACHYS CLIFTONI, *F. v. M.*, a var. with closer vestiture and smaller leaves. W.A., 20 miles N.W. from Lake Lefroy.

LACHNOSTACHYS VERBASCIFOLIA, *F. v. M.*, a var. with thinner tomentum and more compound inflorescence. W.A., near Esperance Bay (Gwynne).

NEWCASTLIA BRACTEOSA, *F. v. M.* S.A., 70 miles S.W. from Mount Watson; W.A., Victoria Desert (C. 53, 54).

NEWCASTLIA CHRYSOTRICHA, *F. v. M.* S.A., 70 miles S.W. from Mount Watson, Birksgate Range; W.A., Victoria Desert (C. 54).

NEWCASTLIA SPODIOTRICHA, *F. v. M.* S.A., Pernamo Hill (C. 22).

NEWCASTLIA CEPHALANTHA, *F. v. M.* S.A. Upper Arkaringa Valley and to towards Everard Range; in these specimens the corolla is larger and somewhat exceeded by the stamens; the upper part of the corolla-lobes, as well as the filaments and style, are blue. W.A., near Mount Squires, near Barrow Range, Victoria Desert (C. 53); also now known from the Georgina River (Alfr. Henry) and the Alfred and Marie Range (E. Giles).

DICRASTYLIS OCHROTRICHA, *F. v. M.* S.A., Mount Watson and 70 miles S.W.; W.A., Barrow Range (two to three and a half feet), Victoria Desert (C. 53).

DICRASTYLIS NICHOLASII, *F. v. M.* W.A., Victoria Desert (C. 57).

DICRASTYLIS PARVIFOLIA, *F. v. M.* W.A., near Gnarlbine, 20 miles N.W. from Lake Lefroy.

CHLOANTHES STACHYODES, *F. v. M.* W.A., near Warangering.

CHLOANTHES LORICATA, *F. v. M.* W.A., Victoria Desert (C. 41), near Gnarlbine.

CHLOANTHES TECKIANA, *F. v. M.* W.A., Knutsford.

CHLOANTHES CŒRULEA, *n. sp.* W.A., near Gnarlbine (Helms), also near Parker's Range (Edwin Merrall).

Leaves much crowded and often ternately or quarternately verticillate, sessile, broad-linear, revolute at the margin, above scantily lanuginous and somewhat rugulose, beneath as well as the branches white-tomentose; flowers blue in a contracted leafy panicle; lower bracts foliaceous; calyx small, deeply cleft into narrow semi-lanceolate lobes, stellately-tomentellous outside; corolla wider than long, deeply-lobed, its tube broad, outside intricately pubescent, inside glabrous, the lowest lobe the largest; stamens considerably shorter than the corolla, their filaments rather thick, glabrous to the base; anthers unprovided with

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appendages; fruit quite small, globular, black, pitted or irregularly reticulate-ridged, with a very narrow basal cavity seceding into its four partitions, each one-seeded.

Well-developed leaves about one inch long, seldom more than one-eighth inch broad, mostly erect. Lower bracts to one-half inch long. Inflorescence two to five inches long, terminating branchlets. Calyx one-eighth to one-sixth inch long. Corolla deep-blue at least towards the base, measuring about half an inch diametrically; filaments yellowish, fixed near the base of the corolla, attenuated towards their lower end. Anthers dorsifixed, yellow, when expanded roundish; style, one-quarter inch long, capillulary, glabrous; stigma very minute, acutely bilobed. Fruit measuring only one-eighth inch. Nearest to *C. halganiacea*.

HEMIPHORA ELDERI, *F. v. M.* W.A., Victoria Desert (C. 57, 58), between Red Hill and Yilgarn.

CYANOSTEGIA TURCZANINOWII, *F. v. M.* W.A., var. DENTATA, near Gnarlbine; var. ANGUSTIFOLIA, between Red Hill and Yilgarn.

MYOPORINÆ.

EREMOPHILA LEUCOPHYLLA, *Bentham.* W.A., Victoria Desert (C. 54).

Var. TURTONI. W.A., near Barrow Range, Victoria Desert (C. 50), two to three feet.

EREMOPHILA ROTUNDIFOLIA, *F. v. M.* S.A., Arkaringa Valley, three to four feet; flowers lilac, rarely white.

EREMOPHILA OPPOSITIFOLIA, *R. Brown.* S.A., 30 miles S.W. from Yeeluginna Hill (C. 4); W.A., Victoria Desert.

EREMOPHILA PAISLEYI, *F. v. M.* W.A., near Gnarlbine.

EREMOPHILA DEMPSTERI, *F. v. M.* W.A., Victoria Desert (C. 61), 4 to 10 feet; flowers lilac.

EREMOPHILA GIBSONI, *F. v. M.* W.A., Victoria Desert (C. 48, 49); leaves much recurved at the apex, corolla bluish.

EREMOPHILA CLARKEI, *F. v. M.* S.A., Arkaringa Valley; a variety, flowers lilac, rarely pink.

EREMOPHILA LATROBEI, *F. v. M.* S.A., Warrina, Arkaringa Creek and Valley; W.A., near Mount Squires, Victoria Desert (C. 40).

EREMOPHILA LONGIFOLIA, *F. v. M.* S.A., Arkaringa Valley, near Everard Range; W.A., Victoria Spring, Fraser Range.

EREMOPHILA FREELINGII, *F. v. M.* S.A., Cootanoorina to Arcoeillinna.

EREMOPHILA MACDONNELLI, *F. v. M.* S.A., Warrina to Arcoeillinna.

EREMOPHILA WILLSII, *F. v. M.* S.A., Upper Arkaringa Valley; a variety with somewhat narrower and less-crowded leaves. W.A., near boundary and Barrow Range.

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EREMOPHILA BROWNII, *F. v. M.* S.A., Arkaringa Valley; W.A., Victoria Desert (C. 53), Gnarlbine.

EREMOPHILA LATIFOLIA, *F. v. M.* S.A., Arcoeillinna, Everard Range; W.A., Victoria Desert (C. 54), Fraser Range

EREMOPHILA DUTTONII, *F. v. M.* S.A., Upper Arkaringa Valley.

EREMOPHILA ALTERNIFOLIA, *R. Brown.* S.A., Arkaringa Valley; W.A., Fraser Range

EREMOPHILA HUGHESII, *F. v. M.* W.A., near Barrow Range; also now known from Mount Narryer (Isaac Tyson).

EREMOPHILA SCOPARIA, *F. v. M.* W.A., Victoria Desert (C. 54, 61), Fraser Range

MYOPORUM DAMPIERI, *Cunn.* W.A. Victoria Desert (C. 49).

MYOPORUM DESERTI, *Cunn.* W.A., Cootanoorina.

MYOPORUM PLATYCARPUM, *R. Brown.* W.A., Victoria Desert (C. 54, 65), Fraser Range.

ASPERIFOLIÆ.

CYNOGLOSSUM DRUMMONDII, *Bentham.* S.A., Arkaringa.

LAPPULA CONCAVA, *F. v. M.* W.A., near Mount Squires, Fraser Range.

ERITRICHIUM AUSTRALICUM, *DeCand.* S.A., Arkaringa Creek.

POLLICHIA ZEYLANICA, *F. v. M.* S.A., on sandhills from Warrina to Everard. W.A., Cavenagh Range, near Barrow Range, and in many places in Victoria Desert.

HALGANIA CYANEA, *Lindley.* S.A., Cootanoorina; W.A., Skirmish Hill, Victoria Desert (Camps 42, 50, 54, 58), Fraser Range, near Gnarlbine, between Red Hill and Yilgarn; Von Treuer Tableland (D. Cumming).

HALGANIA LAVANDULACEA, *Endl.* W.A., 20 miles N.W. from Fraser Range.

HELIOTROPIUM EUROPÆUM, *Linné.* S.A., Warrina.

HELIOTROPIUM ASPERRIMUM, *R. Brown.* S.A., outskirts of Everard Range; W.A., near Mount Squires, Fraser Range.

HELIOTROPIUM TENUIFOLIUM, *R. Brown.* A paniculate form, W.A., Mount Squires.

EPACRIDEÆ.

LYSINEMA CILIATUM, *R. Brown.* W.A., between Red Hill and Yilgarn, near Mount Churchman.

CONIFERÆ.

CALLITRIS VERRUCOSA, *R. Brown.* S.A., 60 miles S.W. from Mount Watson. W.A., Victoria Desert (C. 41), 56 miles N.W. from Fraser Range.

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Var. A. W.A., Victoria Desert (C. 62), 40 miles N.W. from Fraser Range.

Var. B. S.A., near Arcoeillinna. W.A., near Cavenagh and Barrow Ranges.

CALLITRIS ACTINOSTROBUS, *F. v. M.* W.A., 140 miles N.E. from Geraldton.

ORCHIDEÆ.

DIURIS EMARGINATA, *R. Brown.* W.A., between Red Hill and Yilgarn.

MICROTIS MEDIA, *R. Brown.* W.A., between Red Hill and Yilgarn.

An imperfect specimen of a *Thelymitra* also occurs in the collection from Victoria Desert (C. 57, 58).

IRIDEÆ.

PATERSONIA LANATA, *R. Brown.* W.A., between Red Hill and Yilgarn. A more silky form.

HÆMODORACEÆ.

ANIGOZANTHOS RUFA, *Labil.* W.A., between Fraser Range and Esperance Bay (Gwynne). Nearly as dark-flowered as *A. fumosa.*

LILIACEÆ.

DIANELLA REVOLUTA, *R. Brown.* W.A., Victoria Desert (C. 51), Fraser Range, and 56 miles N.W. of Quardanoolagin; Lake Darlot (D. Cumming).

WURMBSEA DIOICA, *F. v. M.* S.A., near Wa-wee Waterhole.

THYSANOTUS PATERSONI, *R. Brown.* W.A., Victoria Desert (C. 54), Fraser Range.

THYSANOTUS DICHOTOMUS, *R. Brown*, var. LINDLEYANUS. W.A., between Red Hill and Yilgarn.

This is the slender-branched form, kept specifically distinct by Endlicher; it agrees precisely with an authentic specimen from Preiss; no differences are observable in the seeds of this variety in comparison with the typic form; the root is not available for examination.

The collection contains also from the same locality a twining *Thysanotus*, not *dichtomus*, but the material is too imperfect for accurate naming.

CORYNOTHECA DICHOTOMA, *F. v. M.* W.A., near Barrow Range.

TRICORYNE ELATIOR, *R. Brown*, var. TENELLA. W.A., near Warangering.

STYPANDRA GLAUCA, *R. Brown*, var. IMBRICATA. W.A., Warangering.

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ARTHROPODIUM PREISSII, *Endlicher*. W.A., between Red Hill and Yilgarn.

SOWERBÆA LAXIFLORA, *Lindley*. W.A., near Warangering.

BARTLINGIA GRANDIFLORA, *F. v. M.*, var. PALEACEA. W.A., near Warangering; between Fraser Range and Esperance Bay (Gywnne); between Red Hill and Yilgarn.

BORYA NITIDA, *Labillardière*. W.A., Karolin.

XEROTES FIMBRIATUS, *F. v. M.* W.A., Victoria Desert (C. 59), between Red Hill and Yilgarn.

XEROTES LEUCOCEPHALA, *R. Brown*. S.A., 70 miles S.W. from Mount Watson; W.A., Victoria Desert (Camps 44, 61).

XANTHORRHŒA PREISSII, *Endlicher*. W.A., near Boorabin.

A variety with short fruiting spike, but with the robust stalk of *X. Preissii*; no leaves obtained.

Grass-trees with trunks up to 15 feet high were observed on sandhills in the Victoria Desert (C. 55).

FLUVIALES.

TRIGLOCHIN CALCITRAPA, *Hooker*. W.A., near Mount Squires.

TRIGLOCHIN CENTROCARPA, *Hooker* S.A., Upper Arkaringa Valley, Mount Ilbillee.

JUNCACEÆ.

JUNCUS PALLIDUS, *R. Brown*. W.A., 20 miles N.W. of Red Hill. It is not easy to distinguish between *J. pallidus* and *J. communis*; but Professor Buchenan, the monographer of *Juncus* and *Luzula*, after lengthened study of the large Australian material submitted to him by one of us (F. v. M.), does not admit *J. communis* as a genuine Australian species.

RESTIACEÆ.

LEPIDOBOLUS PREISSIANUS, *Nees*. W.A., Victoria Desert (C. 56, 57).

CYPERACEÆ.

CYPERUS LÆVIGATUS, *Linné*. S.A., Nilpena, a slender form, with some of the spikelets solitary.

CYPERUS VAGINATUS, *R. Brown*. S.A., Nilpena, near Mount Ilbillee.

CYPERUS SUBULATUS, *R. Brown*, var. CONFERTUS. W.A., Von Treuer Tableland (D. Cumming). The flower-bearing bracts are greyish, whereas in the plant from Alice Springs they are pale-brown. This has also some relation to *C. Gilesii*. As the typical plant is of littoral habit, it seems very doubtful whether the plant of the interior areas is actually the same. No ripe fruits are yet available.

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CYPERUS IRIA, *Linné.* S.A., near Arkaringa Creek.

CYPERUS ROTUNDUS, *Linné.*. S.A., Warrina and Cootanoorina. The tunicate corms of this species are roasted for food by the aboriginals. The native name is *yalpa.*

FIMBRISTYLIS COMMUNIS, *Kunth.*, var. GRACILIS. S.A., Warrina to Cootanoorina.

SCIRPUS CARTILAGINEUS, *Sprengel.* S.A., between Red Hill and Yilgarn.

SCHOENUS APHYLLUS, *Boeckeler.* W.A., Victoria Desert (C. 56, 58). Stems finely, but distinctly, furrowed.

SCHOENUS HEXANDRUS, *spec. nov.*

Rather dwarf; stems very slender, smooth, but distinctly striated, leafless, except at the base; leaves rudimentary, compressed-subulate; cylindric petioles close, at the orifice densely barbellate; fascicles of spikelets capitular, solitary, terminal, small, often undeveloped; floral leaf solitary, diminished to a bract, provided with a barbellate clapsing stalk; spikelets few or several, small, ellipsoid-lanceolar; floral bracts about seven to nine, brown, with narrow pallid margin, glabrous, acutely pointed, usually one of the lower only maturing fruit; stamens six, all with very narrow anthers; stigmas much shorter than the style; hypogynous setules absent; fruit pale, orbicular-ovate, evidently compressed, devoid of lustre.

W.A., Victoria Desert (C. 57).

Stems numerous, variously less than one foot high. Spikelets one-quarter to one-third inch long. Fruit slightly pointed, scarcely one-tenth inch long.

This species is in its alliance nearest to *S. pleiostemoneus* and *S. deformis*, differing from both already in the inflorescence, in which respect our new plant is nearer to *S. aphyllus.*

SCHOENUS ARMERIA, *Boeckeler.* W.A., Victoria Desert (C. 58).

LEPIDOSPERMA LEPTOSTACHYUM, *Bentham.* W.A., Karoling.

LEPIDOSPERMA RESINOSUM, *Bentham.* W.A., Victoria Desert (C. 59).

LEPIDOSPERMA GRACILE, *R. Brown.* W.A., Fraser Range, Karoling.

LEPIDOSPERMA CANKSCENS, *Boeckeler.* S.A., Mount Ilbillee, at 3,000 feet elevation, attains to rather above three feet high.

LEPIDOSPERMA VISCIDUM, *R. Brown.* W.A., 50 miles S.E. from Mount Churchman. (C. 93). The identical plant was brought from between Fraser Range and Esperance Bay by Mr. Dempster, and east of Ularing by Mr. J. Young. The plant varies much in height.

CAUSTIS DIOICA, *R. Brown.* W.A., 85 miles N.E. by E. from Esperance Bay (Gwynne); probably also Victoria Desert (C. 54), but only received in a flowerless state.

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GRAMINEÆ.

PANICUM LEUCOPHAEUM, *H.* and *K.* S.A., Warrina, Arkaringa Valley, outskirts of Everard Range, near Ferdinand River.

PANICUM GRACILE, *R. Brown.* S.A., Arkaringa Creek; W.A., Victoria Desert (C. 53); Bubba-ngundi Creek (D. Cumming).

PANICUM EFFUSUM, *R. Brown.* S.A., Cootanoorina.

PANICUM DECOMPOSITUM, *R. Brown.* S.A., Warrina, Arkaringa Creek, about Everard Range; W.A., Lake Way (D. Cumming).

TRAGUS RACEMOSUS, *Haller.* S.A., Cootanoorina.

NEURACHNE ALOPECUROIDES, *R. Brown.* S.A., outskirts of Everard Range; W.A., Victoria Desert (C. 58); Lake Way (D. Cumming).

NEURACHNE MITCHELLIANA, *Nees.* S.A., Upper Arkaringa Valley.

NEURACHNE MUNROI, *F. v. M.* S.A., Upper Arkaringa Valley.

ERIANTHUS FULVUS, *Kunth.* S.A., Arkaringa Creek and Valley, Pernamo Hill.

ANDROPOGON SERICEUS, *R. Brown.* S.A., Arkaringa Creek.

ANDROPOGON EXALTATUS, *R. Brown* S.A., outskirts of Everard Range.

ANDROPOGON BOMBYCINUS, *R. Brown.* S.A., Arkaringa Creek and Upper Arkaringa Valley; W.A., 25 miles N.E. from Fraser Range.

ANTHISTIRIA CILIATA, *Linné.* W.A., near Lake Deborah.

ARISTIDA ARENARIA, *Gaud.* S.A., Warrina to Everard Range; W.A., Victoria Desert (C. 53), Fraser Range; long. 121°, lat. 26° 31′ (D. Cumming).

ARISTIDA RAMOSA, *R. Brown.* S.A., Cootanoorina.

ARISTIDA CALYCINA, *R. Brown.* S.A., Cootanoorina Creek, Arkaringa Creek, Everard Range. W.A., Victoria Desert (C. 40), Fraser Range.

STIPA ELEGANTISSIMA, *Labill.* W.A., Victoria Desert, (C. 61), Fraser Range.

STIPA SETACEA, *R. Brown.* S.A., Upper Arkaringa Valley; W.A., Victoria Desert (C. 53, 58), Fraser Range.

STIPA SEMIBARBATA, *R. Brown.* S.A., Upper Arkaringa Valley.

STIPA SCABRA, *Lindley.* S.A., Arkaringa Creek; W.A., Fraser Range.

AMPHIPOGON STRICTUS, *R. Brown.* W.A., Victoria Desert (C. 50, 53).

PAPPOPHORUM COMMUNE, *F. v. M.* S.A., Warrina to Arkaringa Creek; W.A., near Mount Squires, Fraser Range.

SPOROBOLUS VIRGINICUS, *H. & K.* S.A., Cootanoorina; W.A., Victoria Desert (C. 40).

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SPOROBOLUS LINDLEYI, *Bentham*. S.A., Cootanoorina to Arcoeillinna.

SPOROBOLUS ACTINOCLADUS, *F. v. M.* S.A., Cootanoorina and Arcoeillinna.

AGROSTIS SOLANDRI, *F. v. M.* W.A., Victoria Spring.

ERIACHNE ARISTIDEA, *F. v. M.* W.A., Skirmish Hill and near Mount Squires.

ERIACHNE SCLERANTHOIDES, *F. v. M.* S.A., Upper Arkaringa Valley; W.A., Victoria Desert (C. 40).

ERIACHNE MUCRONATA, *R. Brown*. S.A., near Ferdinand River, Pernamo Hill.

DANTHONIA BIPARTITA, *F. v. M.* S.A., Arkaringa Creek and Upper Arkaringa Valley, near Ferdinand River. W.A., Victoria Desert (C. 51).

DANTHONIA PENICILLATA, *F. v. M.* W.A., Fraser Range.

ASTREBLA PECTINATA, *F. v. M.* W.A., Von Treuer Tableland (D. Cumming).

CHLORIS ACICULARIS, *Lindley*. S.A., Arkaringa Creek, near Mount Watson; W.A., Fraser Range; Von Treuer Tableland (D. Cumming).

ELEUSINE CRUCIATA, *Lamarck*. S.A., Warrina to Upper Arkaringa Valley; W.A., Lake Darlot and Newland Range (D. Cumming).

POA NODOSA, *Nees*. W.A., Fraser Range.

POA RAMIGERA, *F. v. M.* S.A., 50 miles S.W. of Mount Watson; W.A., near Ernest Giles Range (D. Cumming).

FESTUCA SCIRPOIDEA, *F. v. M.* W.A., Elichaputten (C. 93).

DIPLACHNE LOLIIFORMIS, *F. v. M.* S.A., between Nilpena and Cootanoorina.

DIPLACHNE MUELLERI, *Bentham*. S.A., Cootanoorina.

TRIODIA PUNGENS, *R. Brown*. S.A., Arkaringa Creek.

A variety remarkable for the bluntness of the lateral lobes of the grain-supporting bract.

BROMUS ARENARIUS, *Labill.* W.A., Victoria Spring, Fraser Range.

ERAGROSTIS TRICOPHYLLA, *Bentham*. S.A., near Mount Watson.

ERAGROSTIS PILOSA, *Palisot*. S.A., Cootanoorina to Arcoellinna.

ERAGROSTIS ERIOPODA, *Bentham*. S.A., Upper Arkaringa Valley, outskirts of Everard Range; W.A., Fraser Range.

ERAGROSTIS SETIFOLIA, *Nees*. S.A., Warrina to Arkaringa.

ERAGROSTIS FALCATA, *Gaud.* S.A., Nilpena to Upper Arkaringa Valley.

TRIRAPHIS MOLLIS, *R. Brown*. S.A., Warrina to Everard Range.

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TRIRAPHIS BROMOIDES, *F. v. M.* S.A., Everard Range W.A., Victoria Desert (C. 54, 57).

AGROPYRON SCABRUM, *Palisot.* W.A., Fraser Range.

RHIZOSPERMÆ.

MARSILEA QUADRIFOLIA, *Linné.* S.A., Warrina; W.A., near Mount Squires, Fraser Range.

FILICES.

OPHIOGLOSSUM VULGATUM, *C. Bauhin.* S.A., near Wa-wee Waterhole, Yuluginna Hill (C. 4).

CHEILANTHES VELLEA, *F. v. M.* S.A., Arcoeillinna Well, Turner Hill (C. 9); W.A., Cavenagh, Barrow and Fraser Ranges.

CHEILANTHES TENUIFOLIA, *Swartz.* S.A., Cootanoorina, Turner and Coffin Hills (C. 9, 12); W.A., Fraser Range, Lake Deborah, &c.

GRAMMITIS REYNOLSDII, *F. v. M.* S.A., Pingegurrinna Hill (C. 14), Birksgate Range; W.A., Cavenagh Range.

GRAMMITIS RUTIFOLIA, *R. Brown.* S.A., Everard Range at 3,000 feet; W.A., Fraser Range, Lake Deborah.

GRAMMITIS LEPTOPHYLLA, *Swartz.* W.A., Lake Deborah.

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GENERAL INDEX.

[The species and genera, the names of which are printed in italics, are described as new.]

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Boy, Fraser Range Tribe.

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Rock-paintings near Wa Wee Waterhole.

Rock-paintings, Camp No. 12.

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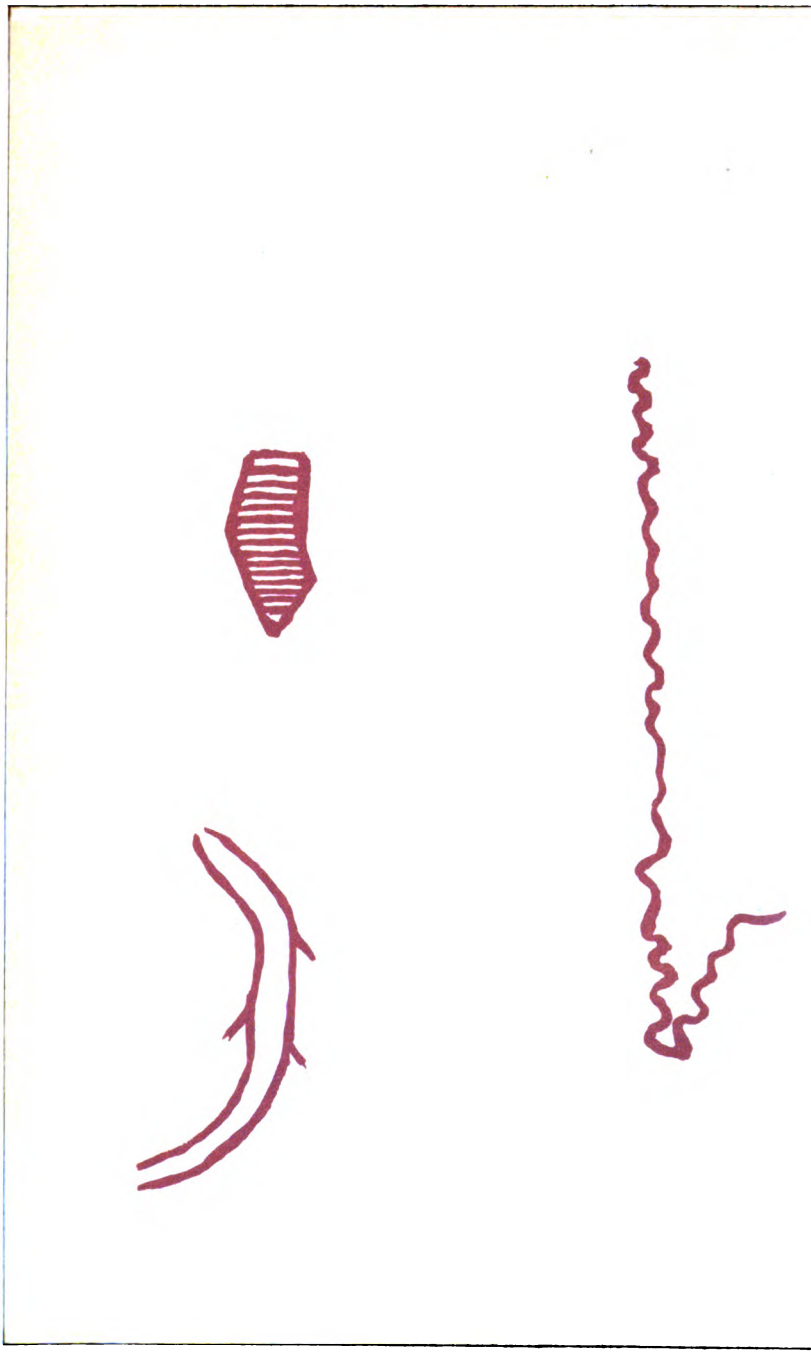

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Plate XII.

Rock-paintings about 5 Miles S.W. from Camp No. 5.

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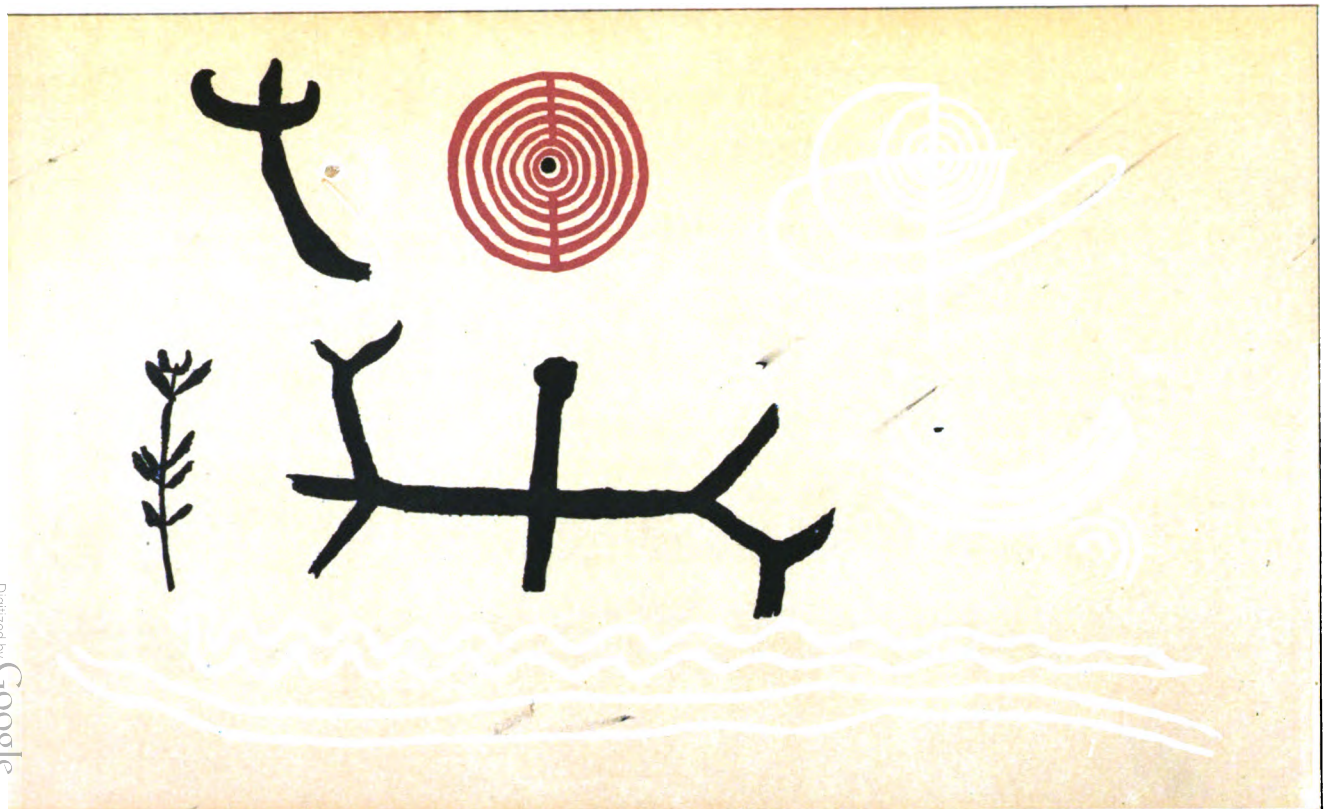

Plate XIII.

Rock-paintings about 5 Miles S.W. from Camp No. 5.

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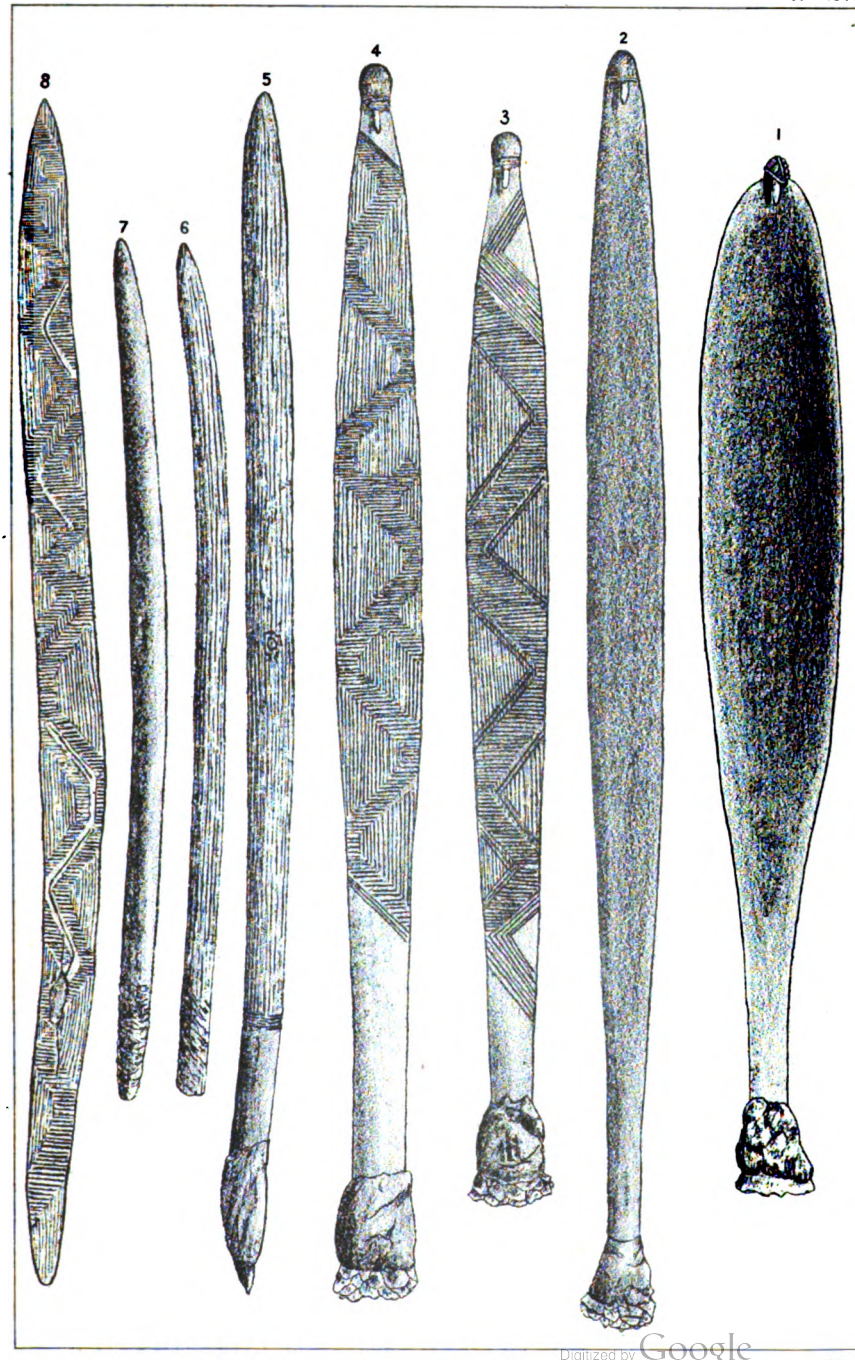

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Native Weapons.

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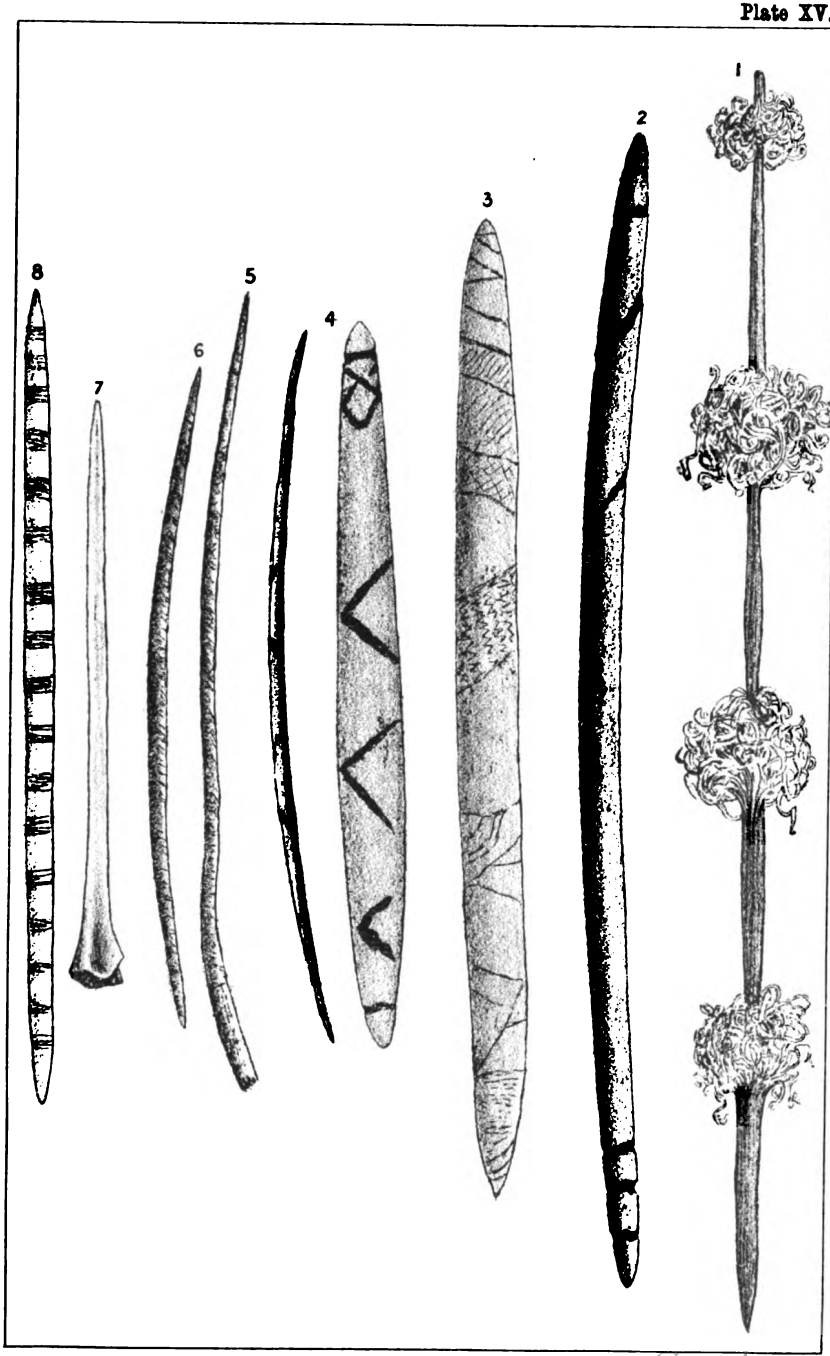

Native Implements and Weapons.

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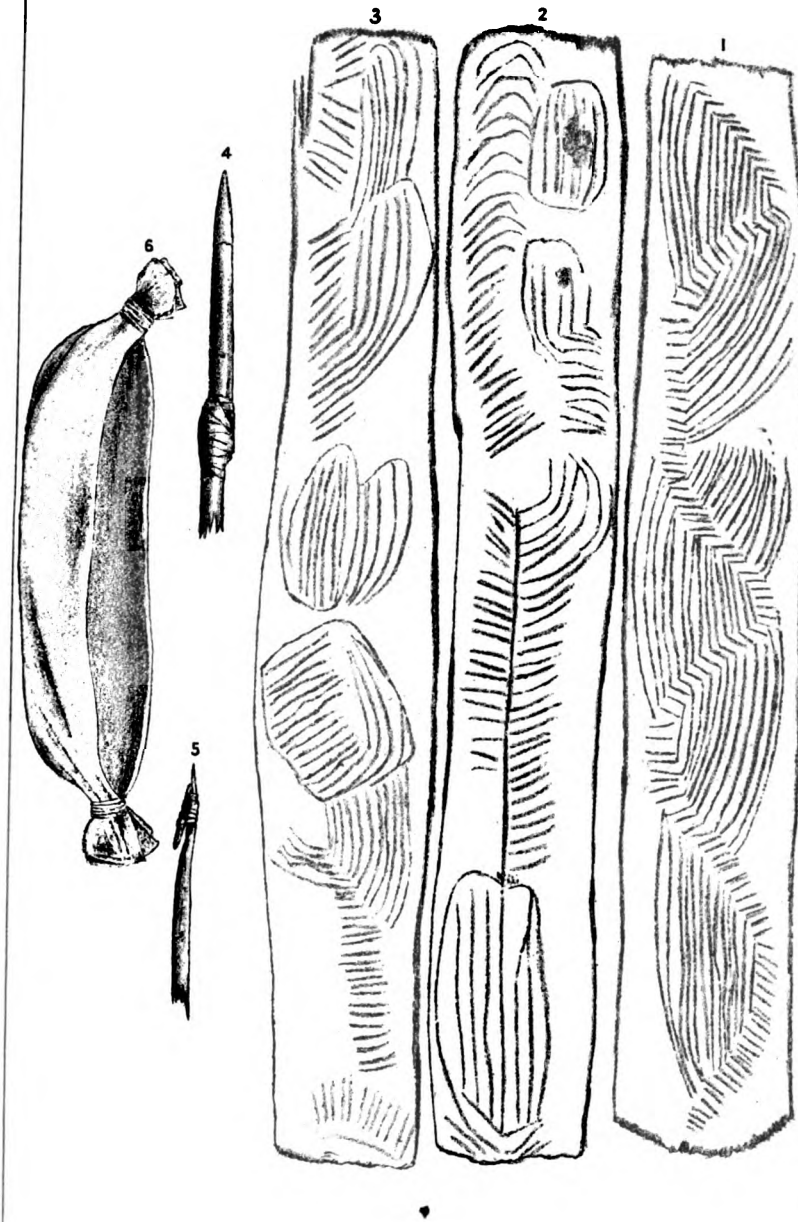

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Native Weapons, &c.

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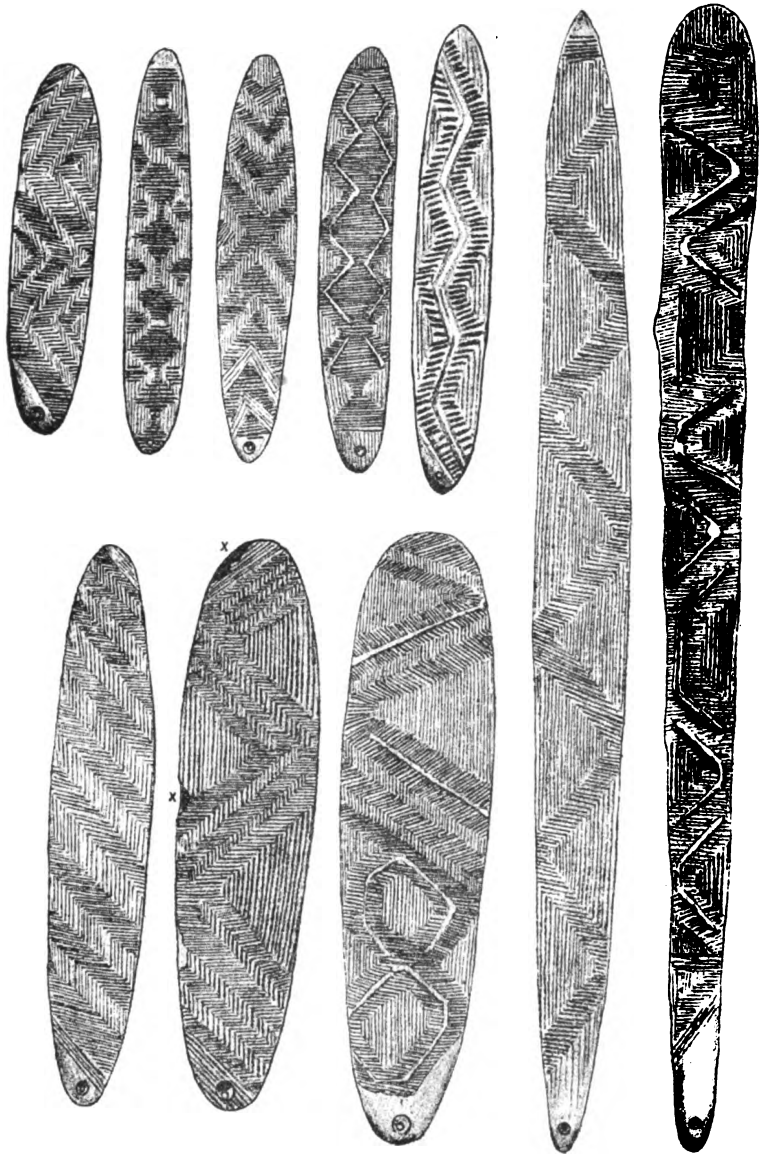

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Kilbarn, Murchison District.

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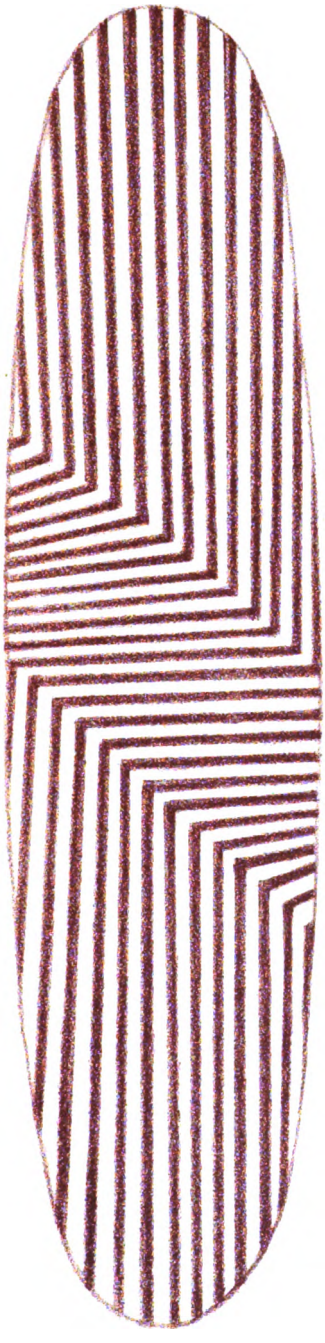

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Native Shield, Murchison District.

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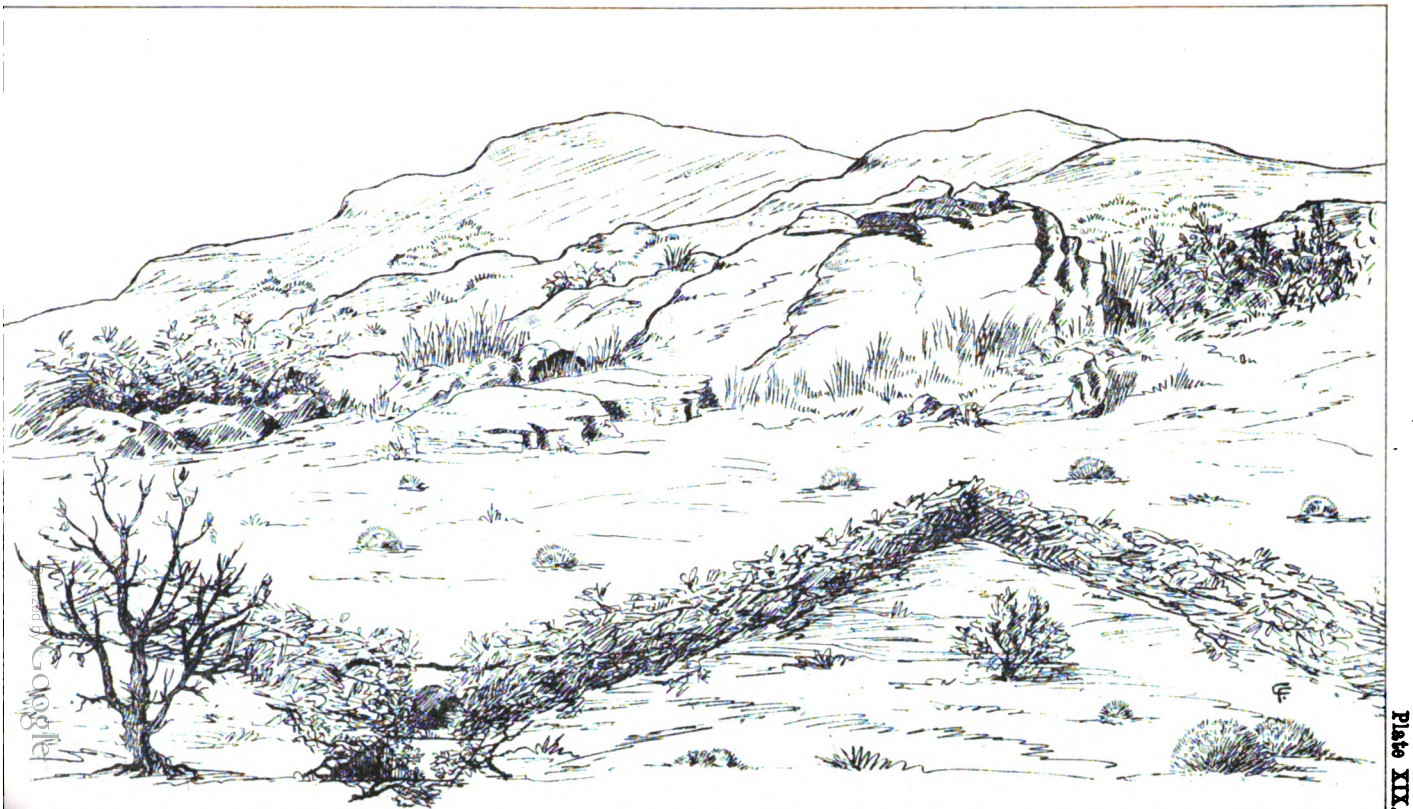

Native Trap for Game.

Plate XIX.

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Ornamentations on Chests of Natives.

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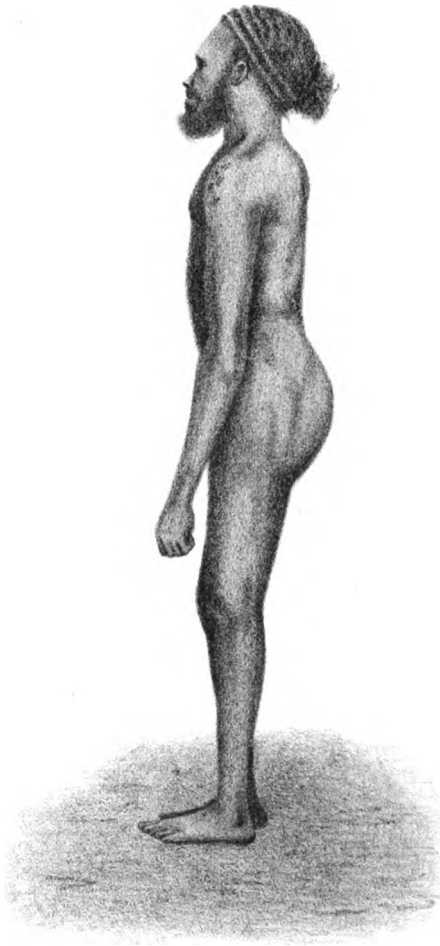

Man of Everard Range Tribe, showing Hair tied up.

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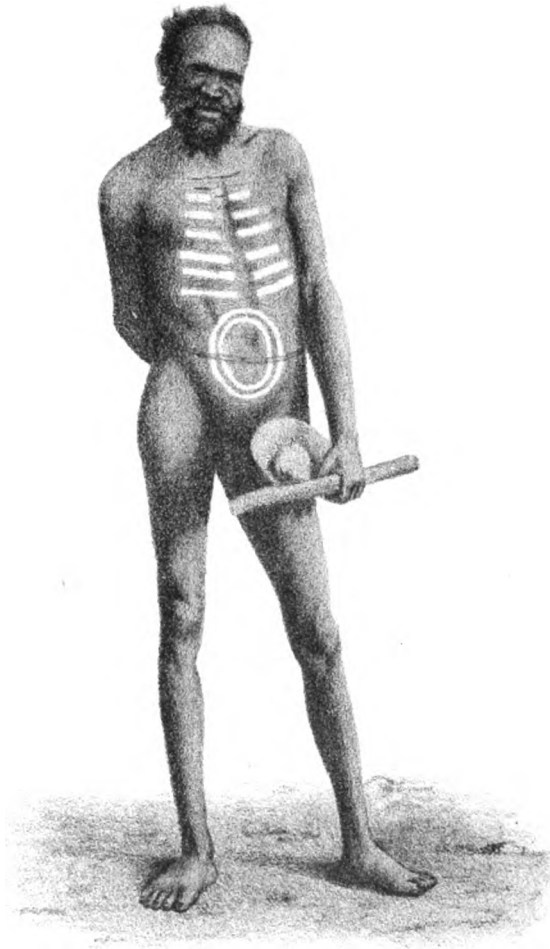

Man of Barrow Range Tribe, showing Chest Ornamentations. (Hair singed off in front.)

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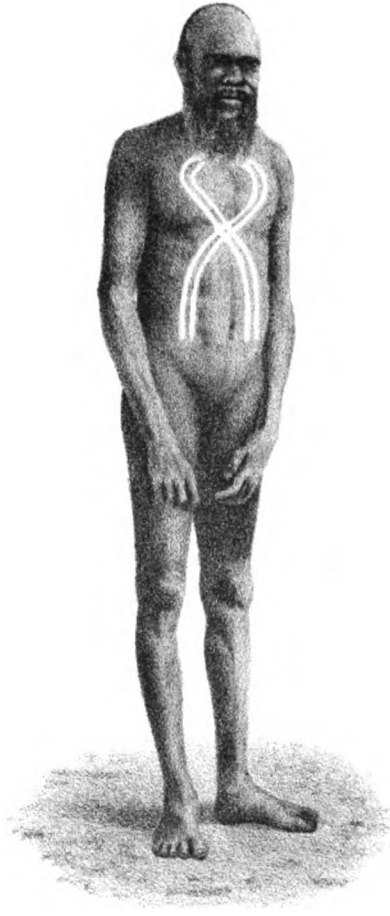

Man of Barrow Range Tribe, showing Chest Ornamentation. (Hair singed off.)

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Man of Victoria Desert Tribe, showing Coverings worn.

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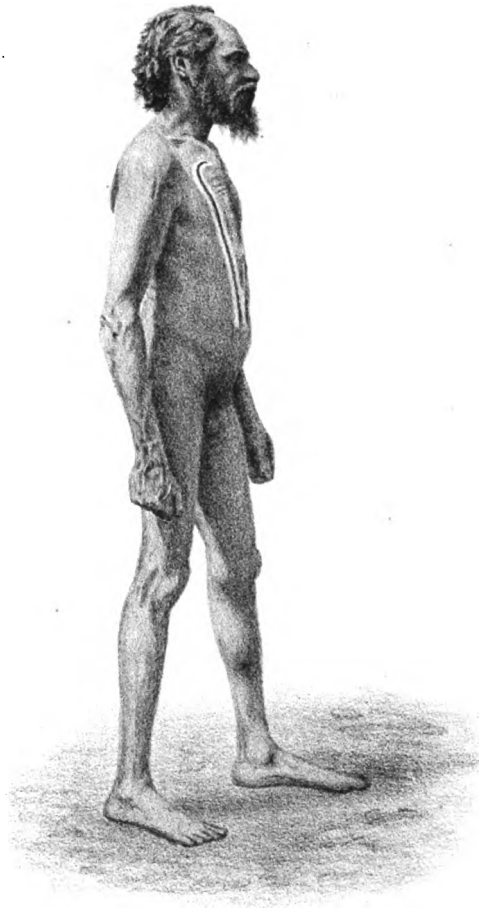

Man of Fraser Range Tribe, showing

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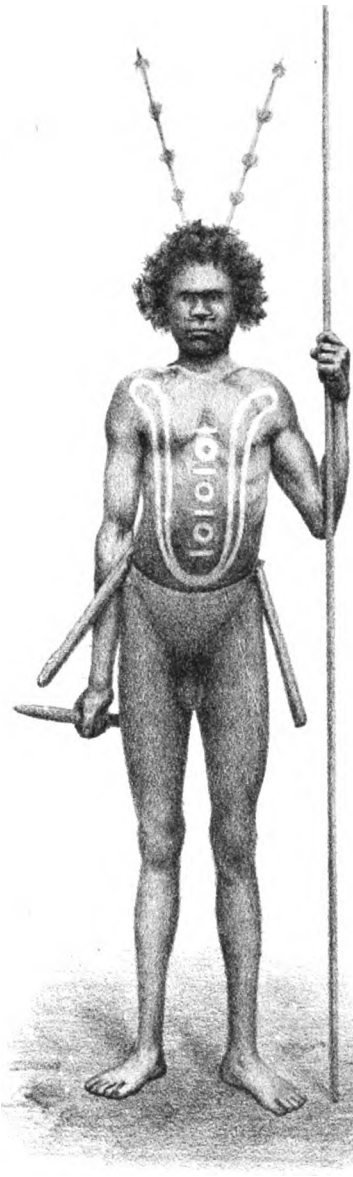

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Female of Fraser Range Tribe, carrying Child.

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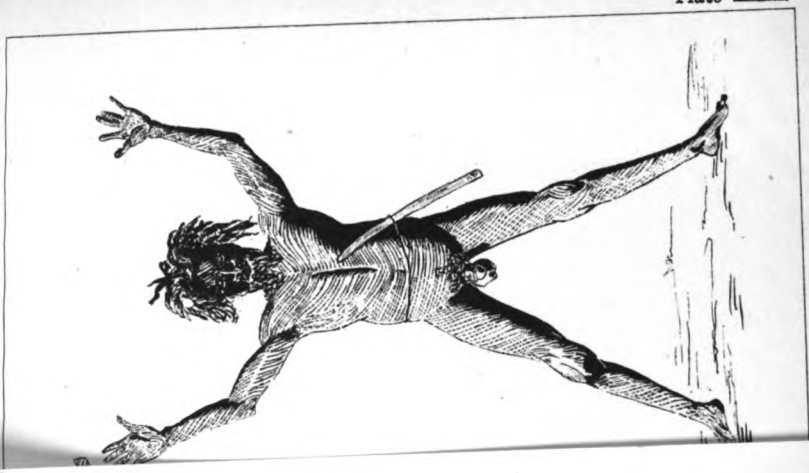

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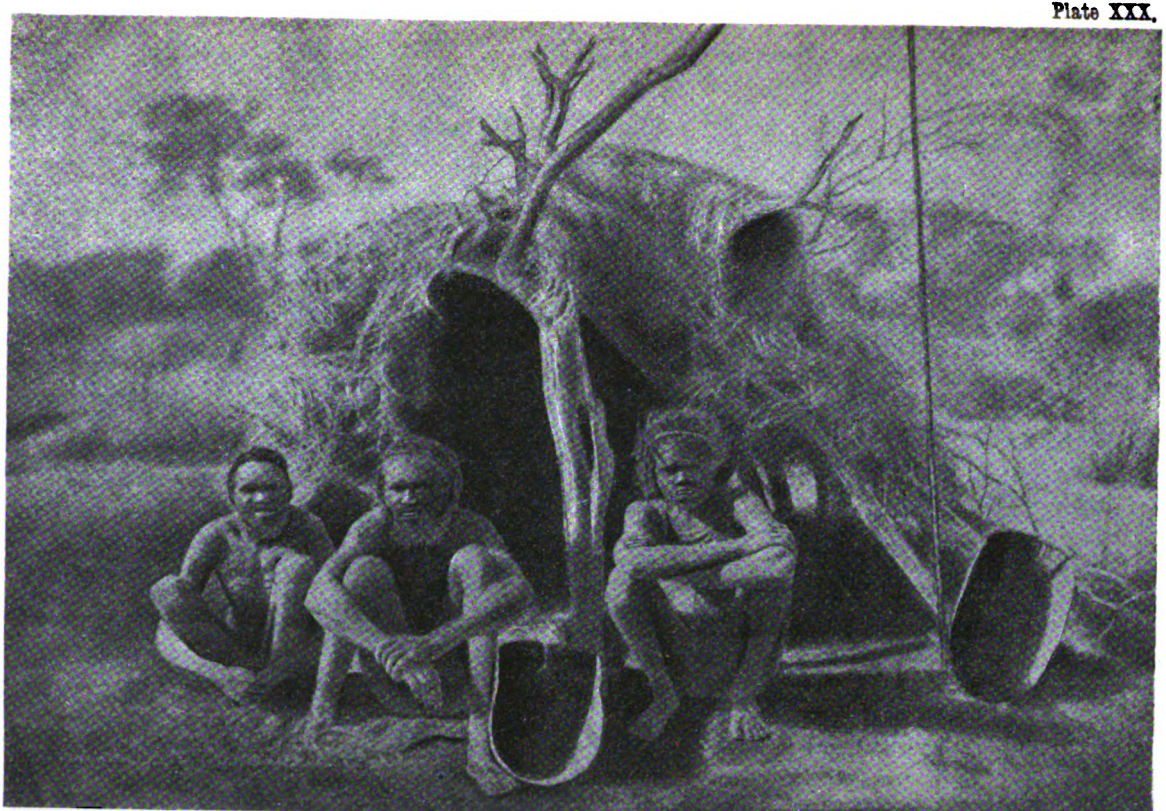

Three Everard Range Natives, showing roll of Native Tobacco on lips; also Wooden Mikas.

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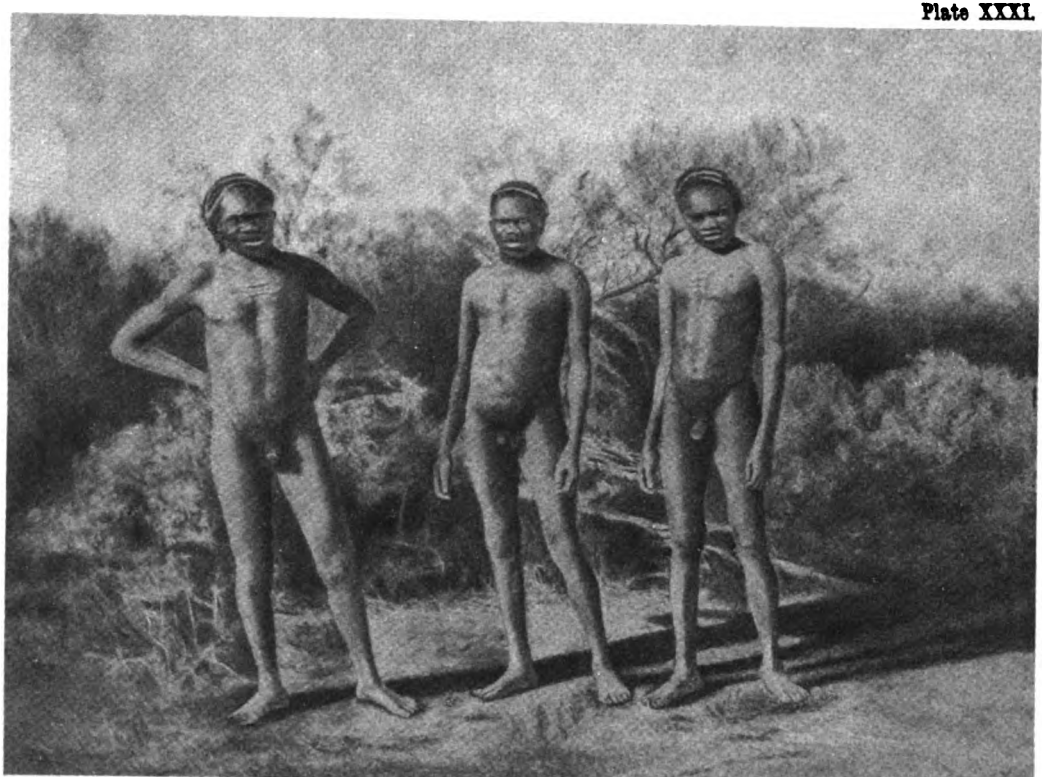

Everard Range Tribe—Three Young Men.

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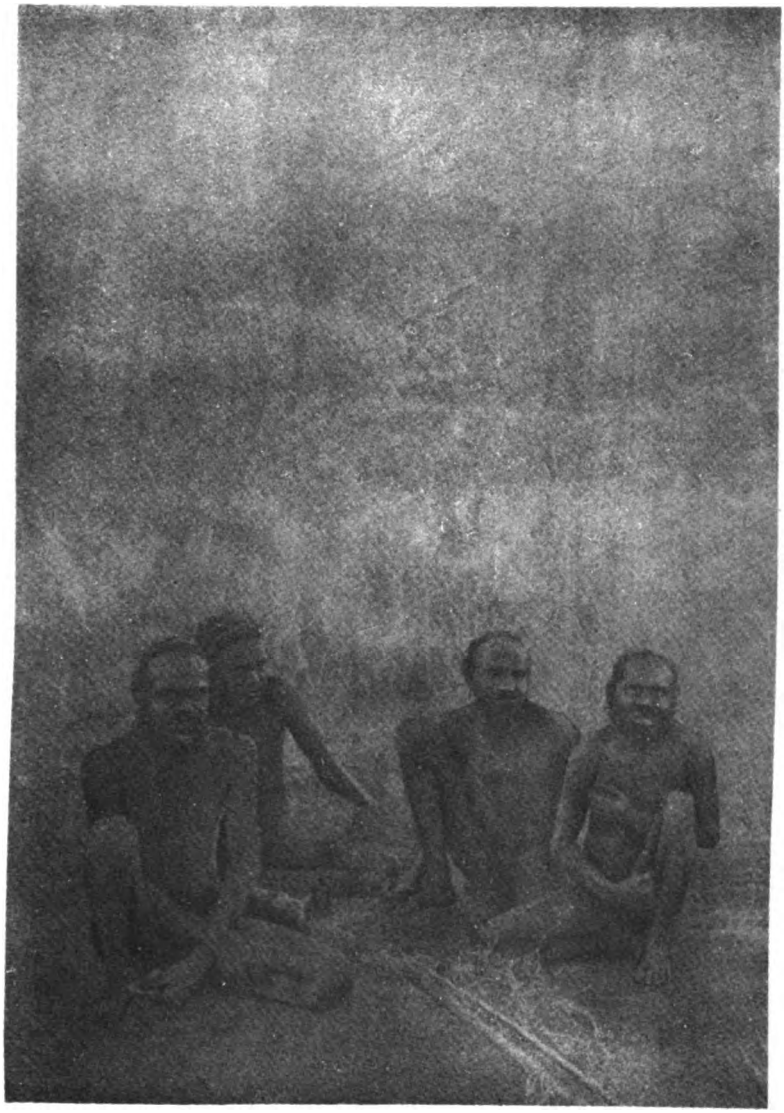

Blyth Range Tribe—Group of Men.

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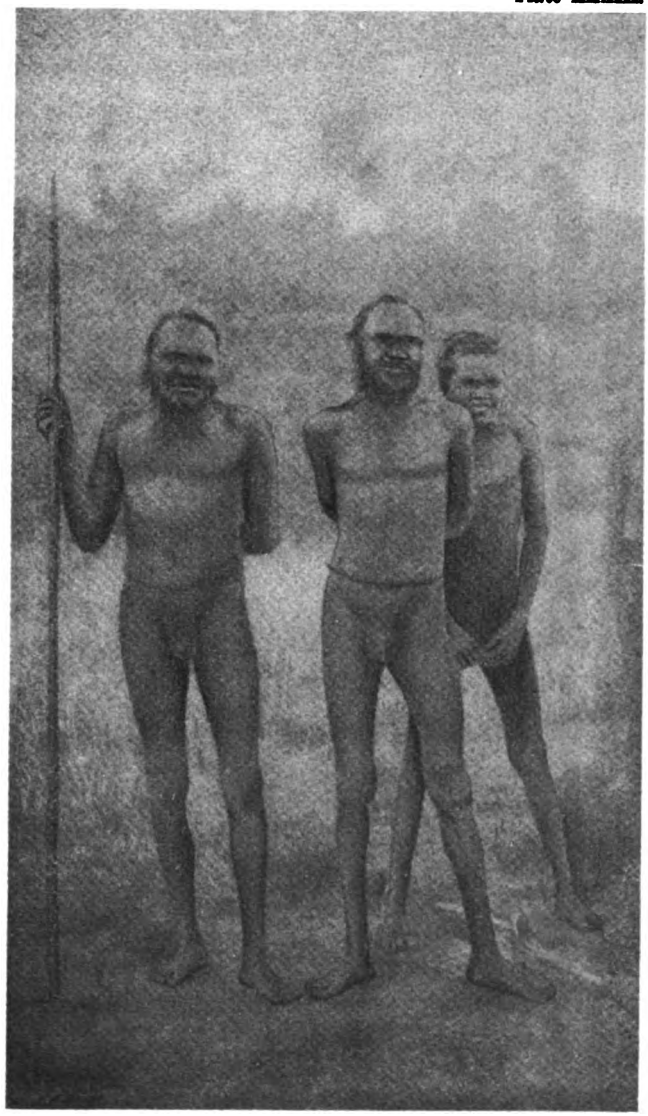

Blyth Range Tribe—Group of Men.

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Fraser Range Tribe—Young Male, uncircumcised.

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Fraser Range Tribe—Adult Male.

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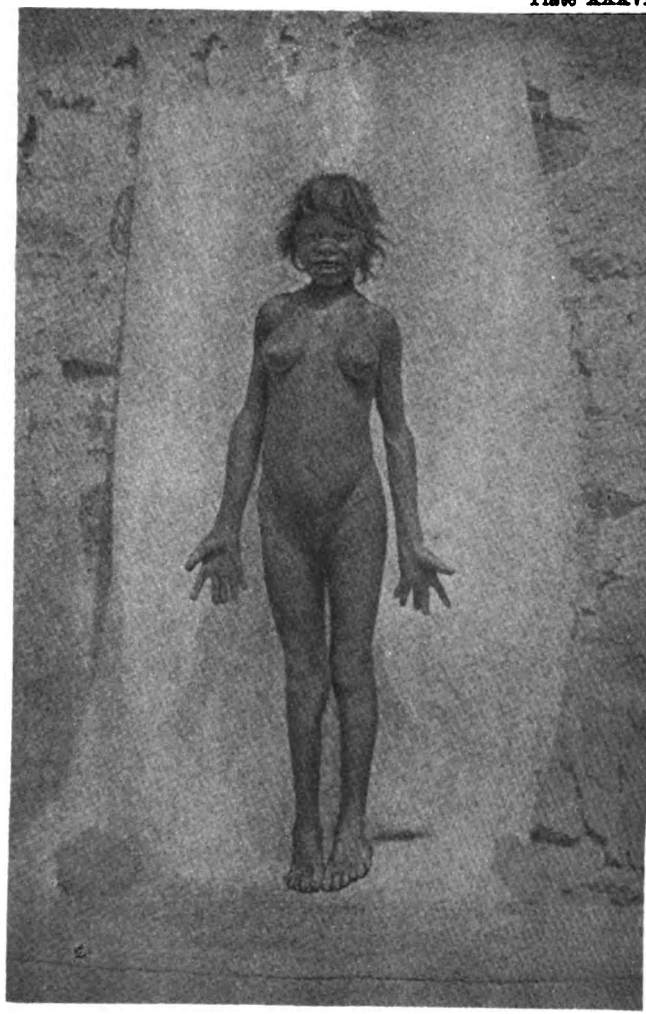
Plate XXXVI.



Fraser Range Tribe—Six-fingered Female.

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Plate XXXVII.

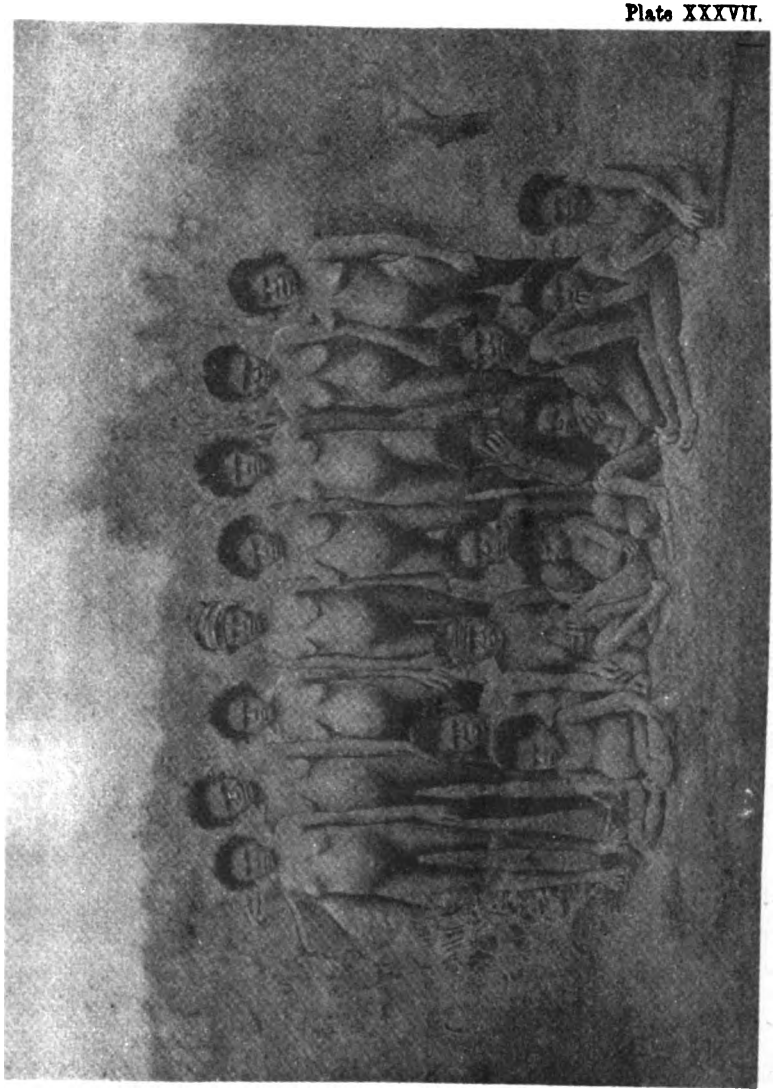

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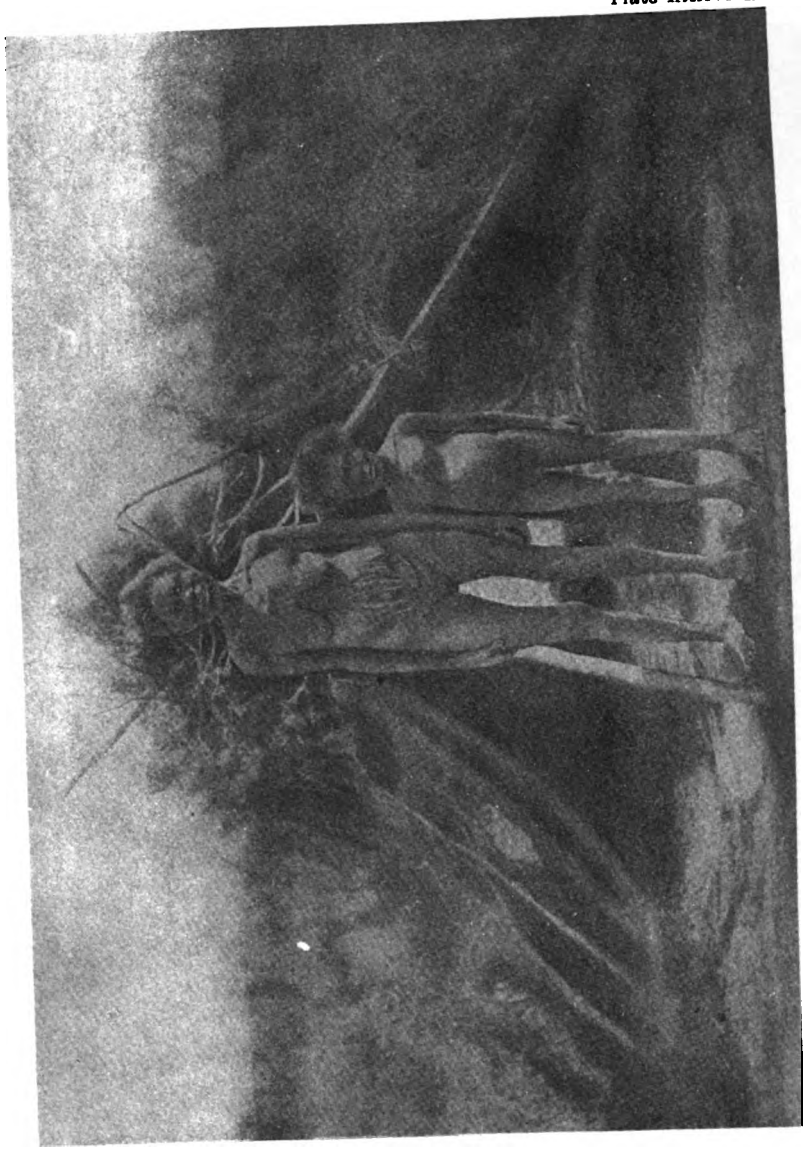
Plate XXXVIII.



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A.VAUGHAN, *Photo Lithographer.*

Plate XXXI.

Hampton Plains Tribe—Adult Male.

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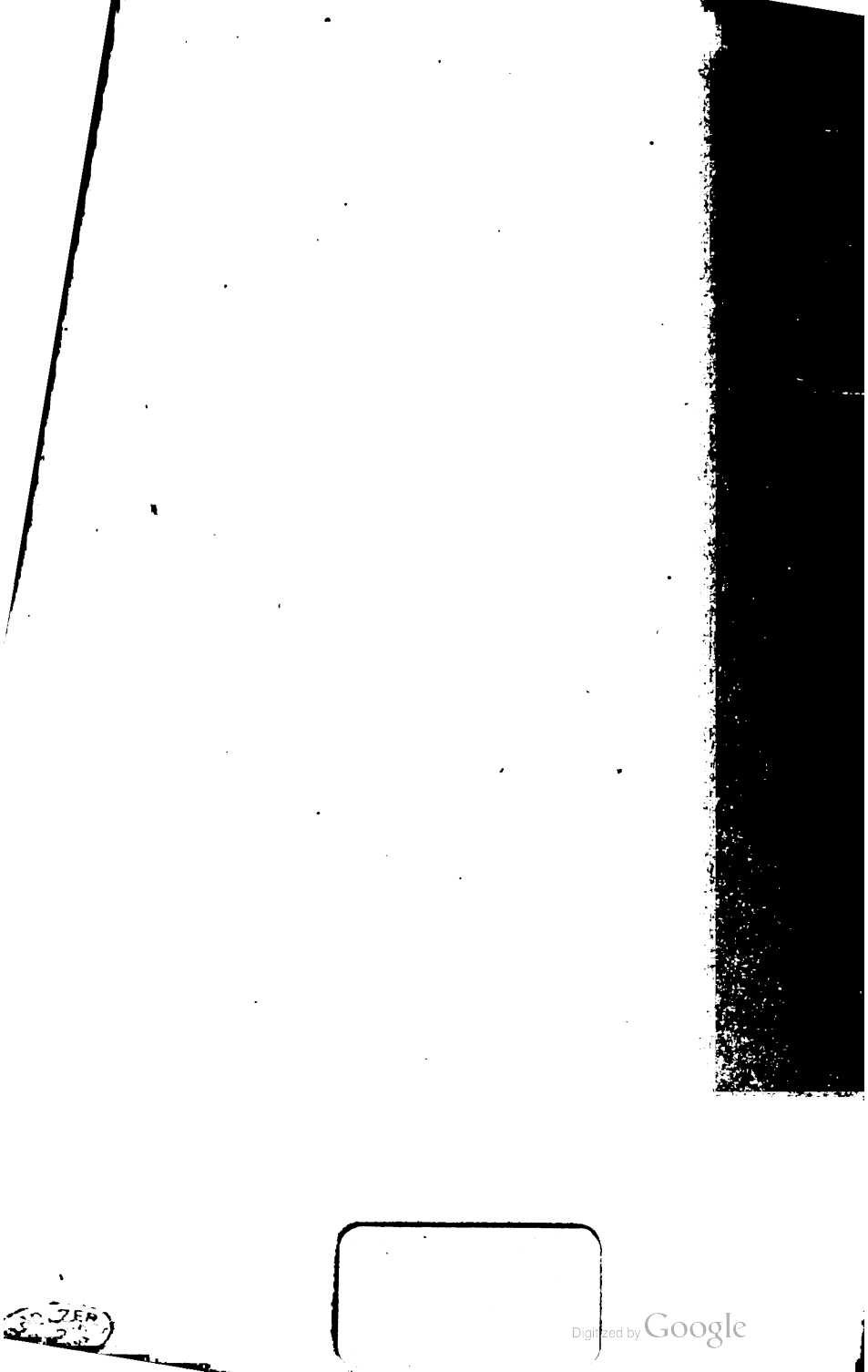
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